

AS ITS CHANGING

--Typical Viewpoint 2025



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01.01.2025

World starts waking up to Indian coffee, exports cross \$1 bn first time

- Traditionally a tea exporter, India is making significant inroads into the global coffee export market with total exports during the current financial year up to November crossing the \$1 billion mark for the first time, according to data from Centre for Monitoring Indian Economy (CMIE).
- The sharp growth is

partly attributed to a surge in Robusta coffee prices , which account for over 40 % of global production ,	and	partly due to stocking ahead of the European Union's new deforestation regulation that could raise the cost of coffee as well as several other agricultural exports to the EU.
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- Global Robusta prices have soared to multi-decade highs
↓
due to **supply issues** in **major** coffee-producing countries like **Vietnam and Brazil**.
- The price of Robusta beans marking a **63% increase** this year alone.
- Notably, India's exports of tea saw **little change**
↓
despite expectations of gaining new markets following the economic crisis in Sri Lanka, one of the largest tea exporters in the world.
- A government official said that **Indian coffee managed** to capture the **"premium segment"** of the export market unlike in the case of the tea.
- A report by the United States Department of Agriculture (USDA) earlier this month highlighted that **drought and high temperatures in Brazil** during the fruit development and filling period caused Arabica and Robusta yields to fall below initial projections.

Notably, Brazil is the world's largest coffee producer , contributing about 40 % of global production.	Meanwhile, Vietnam , the second-largest coffee producer, has also reported lower production forecasts.
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- Coffee Board data showed that

Chikkamagaluru, Kodagu and Hassan in Karnataka with the largest producer of Arabica and Robusta coffee.	Kerala comes a distinct second	followed by Tamil Nadu .
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- “The **beginning of the rainy season started dry**

and

was followed by **below-average precipitation and temperatures** in many major growing areas.

- While similar conditions reduced yields and output in the past two harvests,

growers responded to higher coffee prices this year by picking as much as possible, including smaller, less profitable cherries.

Bean exports are forecast to rebound by 1.8 million bags to 24.4 million due to higher available supplies,”

INDIA'S COFFEE EXPORTS

(April - Nov)

■ Exports (\$million)

2020-21	460.7
2021-22	621.5
2022-23	765.6
2023-24	803.8
2024-25	1,146.9

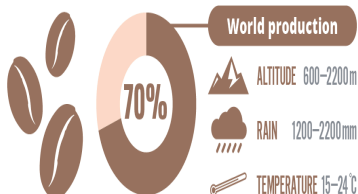
Source: Commerce Ministry/ CMIE



Coffee Chemistry: Arabica vs. Robusta



Arabica coffee beans

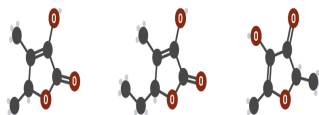


Chlorogenic acid content 5.5–8.0%

Lipid (fat) content 15–17%

Sugar (sucrose) content 6.0–9.0%

Key flavour compounds



Sotolon

Abhexon

Furanol

These compounds give the coffee sweet caramel notes

Arabica produces less coffee per hectare than robusta, and is consequently more expensive. It is also more susceptible to disease.



KEY: ● Carbon ● Oxygen ● Nitrogen ● Hydrogen

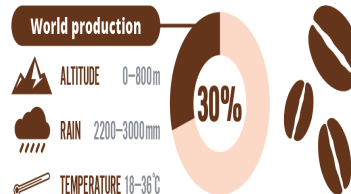


Regions in which arabica is primarily grown

Regions in which robusta is primarily grown

Regions in which arabica and robusta are grown

Robusta coffee beans

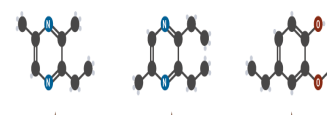


Chlorogenic acid content 7.0–10.0%

Lipid (fat) content 10.5–11.0%

Sugar (sucrose) content 3.0–7.0%

Key flavour compounds



3,5-dimethyl-2-ethylpyrazine

2,3-diethyl-5-methylpyrazine

4-ethylguaiacol

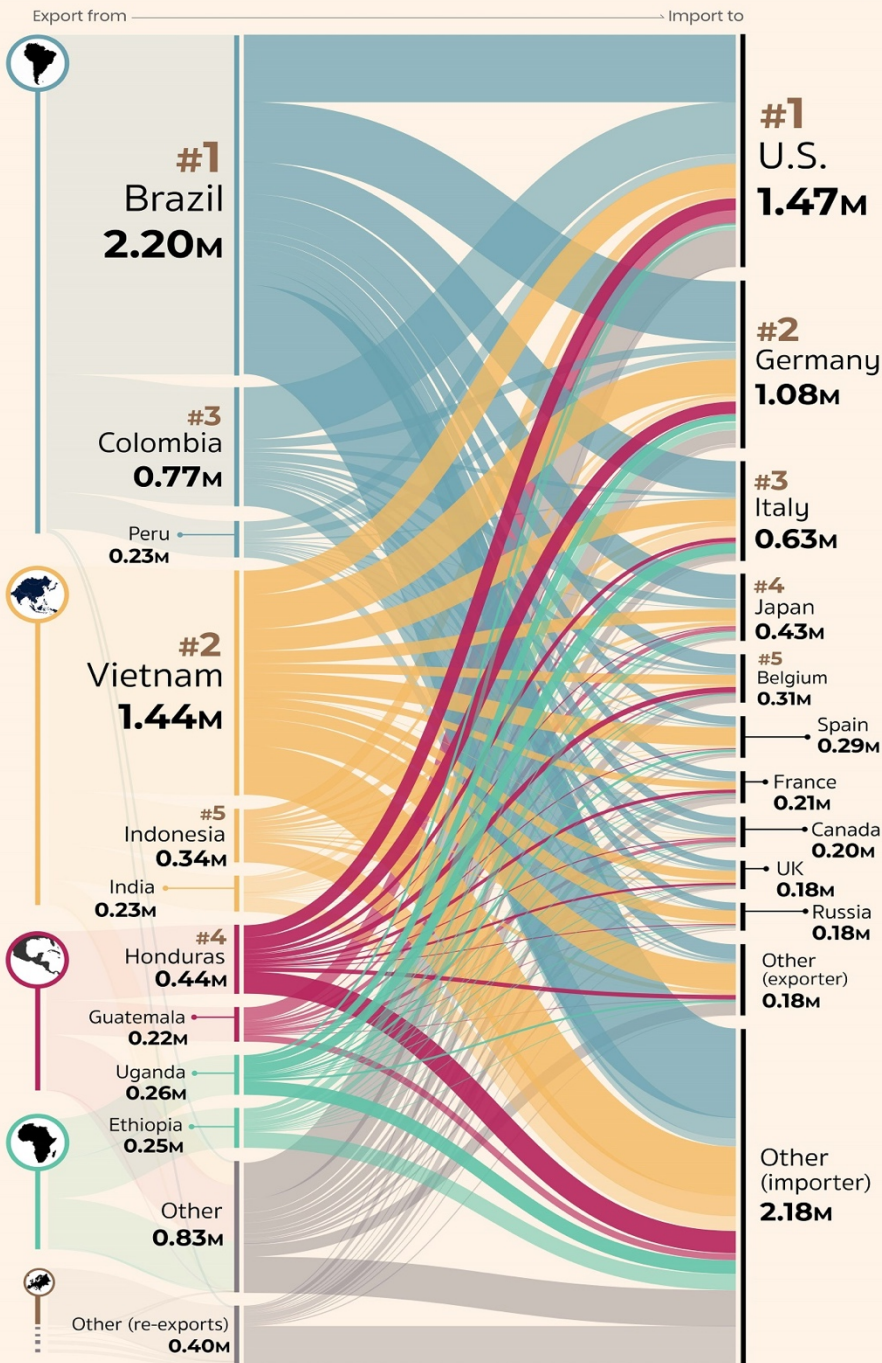
These compounds give the coffee spicy, earthy notes

Robusta is considered to have a harsher, more bitter flavour compared to the smoother flavour of arabica. It is often used in blends.

Global Trade Flow of Coffee Beans

Based on tonnes of non-roasted, non decaffeinated coffee traded in 2019.

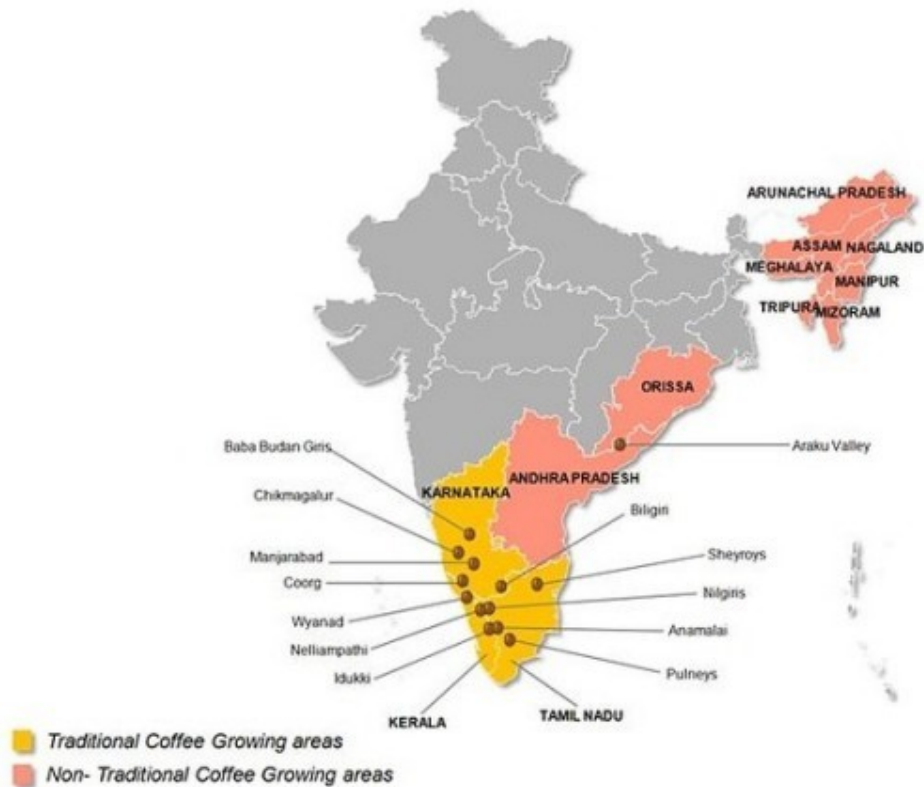
84% of global coffee exports come from just 10 countries, and 68% of all coffee exports are imported by the U.S., EU, UK, and Canada.



created by Airi (Iris) Ryu

Source: resourcetrade.earth, values are rounded

Coffee Producing Areas of India



What happens in a warmer climate

- Optimal coffee-growing conditions include
 - **cool to warm tropical climates,**
 - **rich soils, and**
 - **few pests or diseases.**
- The world's Coffee Belt spans the globe **along the equator**, with cultivation in North, Central, and South America; the Caribbean; Africa; the Middle East; and Asia. **Brazil is now the world's largest coffee-producing country.**
- If Earth's *climate continues to warm over the coming decades, obstacles to coffee cultivation will multiply.*
 - Consider **Arabica coffee** (*Coffea arabica*), the species **grown for roughly 70 percent of worldwide coffee production.** Arabica coffee's optimal temperature range is 64°–70°F (18°C–21°C). It can tolerate mean annual temperatures up to roughly 73°F (24°C).

- Above those moderate temperatures, fruit development and ripening accelerate. (If you didn't know, coffee "beans" are actually the pit, or seed, of the plant's fruit.)
 - **Faster ripening might not sound bad, but it actually degrades coffee bean quality.**
 - Continuous exposure to temperatures up to and just **over 86°F (30°C)** can severely damage coffee plants, stunting growth, yellowing leaves, even spawning stem tumors.

World's top 25 coffee-growing countries



03.01.2025

BENGALURU-MYSURU INFRASTRUCTURE CORRIDOR PROJECT

No one can be deprived of property without adequate compensation: SC

Says date of fixing valuation can be shifted to recent one in exceptional cases

“Right to Property ceased to be a Fundamental Right by the Constitution (Forty-Fourth Amendment) Act, 1978, however, it continues to be a human right in a welfare State, and a constitutional right under Article 300-A of the Constitution. Article 300-A of the Constitution provides that no person shall be deprived of his property save by authority of law. The State cannot dispossess a citizen of his property except in accordance with the procedure established by law,” a bench of justices B R Gavai and K V Viswanathan said in its judgement. The decision came on an appeal against the November 22, 2022 judgement of a Division Bench of the Karnataka High Court dismissing the challenge to the judgement of a single judge of the HC on the question of acquisition of land for the Bengaluru-Mysuru Infrastructure Corridor Project in 2003.

How in-flight Internet works

Tata Group's Air India has announced the rollout of free in-flight Internet services on board domestic and international flights serviced by select aircraft in its fleet. Here is how this will work

How does in-flight Wi-Fi work?

- Multiple Wi-Fi antennae are located inside the aircraft cabin, which get signals from passengers' devices.

From these in-cabin antennae, the signals are sent to an on-board server.

Till this point, the process is the same for both ATG and satellite-based connectivity.

- In the case of a **satellite-based connectivity system**,

the signals are then transmitted **through an antenna**
on top of the aircraft to a satellite,

which **relays** them to a ground station or teleport.

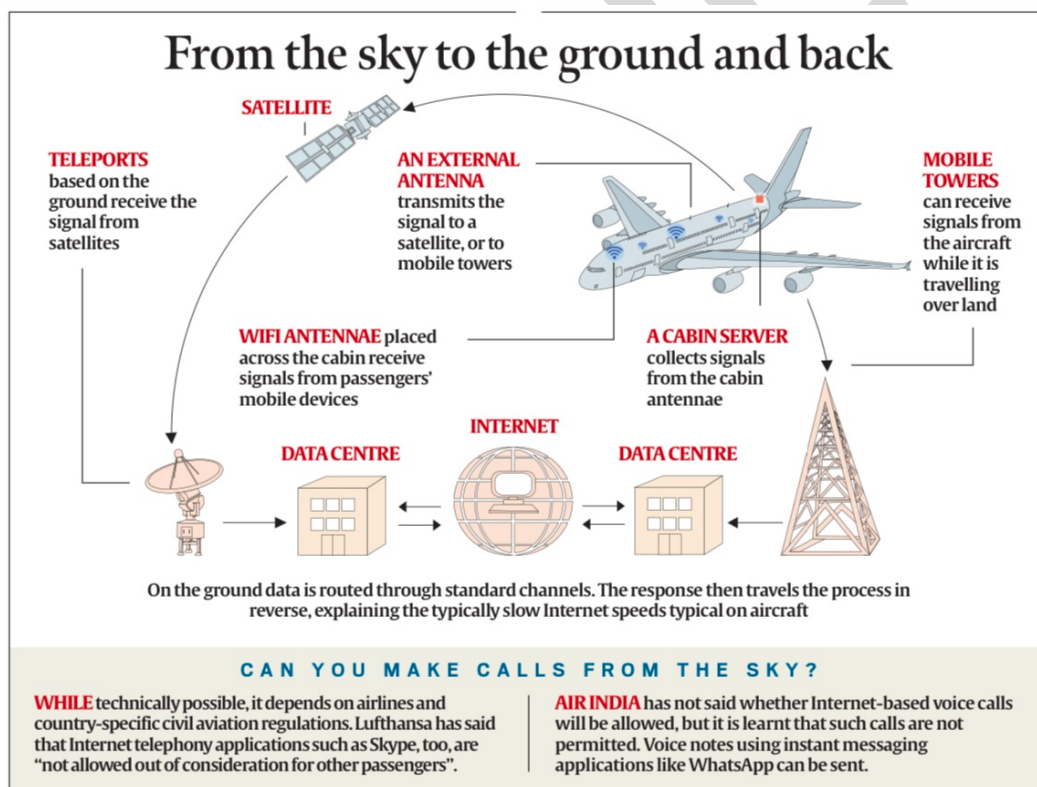
In response, signals are sent from the ground station to the satellite,
which relays then to the aircraft.

- In **ATG technology**,

the signals from the server on board the aircraft
are transmitted **directly to on-land cellular towers**
using the antenna underneath the aircraft.

The towers then respond with signals to the aircraft.

- ✧ **In-flight Wi-Fi is typically much slower than on the ground**. But
this is changing with newer technologies entering this market.



04.01.2025

Tsangpo dam, India's options

What is the mega Yarlung Tsangpo project planned by China? What does Beijing hope to accomplish by building the **world's largest hydropower dam**, and how could India be impacted? Experts weigh in

- On December 25, China approved the construction of the world's largest hydropower project on the **Yarlung Tsangpo (or Zangbo) river** in **Tibet**.

On completion, the 60,000 MW project will have

the capacity to produce three times the amount of electricity as the world's largest hydro project, the **Three Gorges Dam** on the Yangtze in **central China**.

- **From Tibet**,

the Yarlung Tsangpo enters **Arunachal Pradesh**,
where it is known as the Siang.

In Assam, it is

Tibet
Arunachal Pradesh
Assam
Bangladesh
Bay of Bengal

joined by tributaries such as Dibang and Lohit, and
is called the **Brahmaputra**.

The river **then enters Bangladesh**,

and

makes its way to the Bay of Bengal.

- An infrastructure project of the scale that China is planning on the Yarlung Tsangpo could affect millions living in these regions, their livelihoods, and the ecology.

"This will not be just another project. This will have a very large reservoir, in a very difficult area; it is very risky, dangerous, and, to my mind, an irresponsible project," Ashok Kantha, a former Indian Ambassador to China, said.

What is the Yarlung Tsangpo project?

- Y Nithiyanandam, professor and Head of the Geospatial Research Programme at Takshashila Institution in Bengaluru, said the **location of the dam** is mentioned in **China's 14th Five-Year Plan (2021-2025)** – at the "**Great Bend**", where the

Yarlung Tsangpo **makes a U-turn** Medog country **before entering Arunachal Pradesh.**

- > Recent developments including the allocation of funds, development of smaller dams along the river channel, and changes in land use in upstream areas, indicate the project is in an advanced planning stage, and visible construction progress is likely to follow soon.

Why does China want this mega project?

- China has said the dam will help it

move away from conventional energy sources
and
achieve **net carbon neutrality by 2060.**

The Yarlung Tsangpo is ideal for hydroelectricity generation – its steep descent from high mountains ensures a “remarkable flow rate”. Dr Nithyanandam said.

What are the specific concerns for India?

- The dam (or dams) could impact the flow of water from China to India, the lower riparian state.
 - > **The bulk of the water in the Brahmaputra system comes from Tibet.**
- Also, “going by the experience of other large dams, they always lead to **other negative consequences.**” The **flow of silt**, crucial for **agriculture**, can get interrupted, and changes in river flow can impact the **local biodiversity**.
- This region is among the world’s most ecologically fragile and earthquake-prone.

A **landslide in 2004** had created the **glacial Parechu Lake** in the Tibetan Himalayas near Himachal Pradesh.

After the Chinese alerted India, the level of the lake was monitored daily.

The lake burst in June 2005
and
sent a large volume of water down the Sutlej,

but timely coordination and planning helped limit the damage.

- “Even if there is no mala fide involved, such incidents become very serious. In the Tsangpo case, you’re talking about a large dam in an earthquake-prone area. Chinese scholars have also raised these concerns extensively, such as in the case of Three Gorges” .
- To prevent disasters, **coordination and exchange of information** between countries is essential..... “China doesn’t feel the need to cooperate more closely with lower riparians. In the Mekong river basin, China has constructed 12 large dams with negative consequences for countries downstream”.



The Siang river in Arunachal Pradesh. Sukrita Baruah

FOREX & FERTILISER

This is right time for government to leave it more to market to decide what MRP of fertiliser, or rupee's exchange rate, should be

- The rupee's slide, **from around 83.8 to 85.8-to-the-dollar** between end-September and now, has introduced a new source of uncertainty for economic agents and policymakers alike.
 - > With most globally-traded commodities priced in dollars and those showing little signs of easing – **Brent crude** has crossed **\$75/barrel** for the first time in two months – it has complicated both costing and fiscal calculations.
 - > So long as the **rupee** moved within an **82-84 range**, as it did for nearly two years from early-October 2022, only dollar prices mattered.
 - > But today, it's **not just prices in dollars, but also the corresponding exchange rate in rupees** that needs to be factored in.
 - > Compounding the situation further is the lack of clarity on how much more the rupee would weaken in the coming weeks and months.
 - > As things stand, the long-dollar, short-rupee trade looks likely to continue, at least till the inauguration of US President-elect Donald Trump and his initial policy pronouncements.
 - > The effects of these are already being seen, for instance, in fertilisers.
- Take **di-ammonium phosphate (DAP)**, **India's second-most consumed fertiliser after urea**, whose current landed import price is upwards of \$630 per tonne. A Rs 2-to-the-dollar depreciation would push up the value of shipments contracted at the price by Rs 1,260 per tonne. Not for nothing, then, that fertiliser companies are hesitant to import.

- > In this case, their worry is not only over the import price in dollars and the exchange rate, but also whether the government would permit them to pass on the resultant higher cost to farmers.
- > The **government**, on the other hand, **does not want companies to increase** the maximum retail price (MRP) from the present RS 27,000 per tonne.
- > It has **approved the extension of a special subsidy** of Rs 3,500/tonne, which was being given on DAP **till December 31, for a further one-year period.**
- > **But that additional subsidy cannot cover the impact of rupee depreciation.**
- > It, then, **leaves only two choices.**

of either allowing an MRP hike

or

the government incurring
an even higher fertiliser
subsidy bill.

- The rupee's weakening is, in a sense, a **wake-up call**, *be it for the government or those with unhedged foreign currency exposures.*

- > An overvalued rupee made it **easier**

for the government to keep prices of
imported fertilisers and fuel
artificially low
for farmers/consumers

and

for firms to borrow
cheap in dollars
without protecting against
exchange risk.

- > Imports also became a default sourcing option for companies, including big retailers, that did not really try to build domestic production supply chains.
- > Those options that were seemingly easy and costless are no longer so.
- > **This is the right time for the government to leave it more to the market to decide what the MRP of DAP or the rupee's exchange rate should be.**

06.01.2025

WHAT US SURGEON GENERAL SAYS ABOUT DRINKING AND CANCER RISK

- Alcohol is the **third leading** preventable cause of cancer in the United States **after tobacco and obesity**, according to a new report by the US Surgeon General.
 - > The advisory, released last week, also said **all alcoholic drinks** – whether **beer, wine or spirits** – should carry a label warning consumers about their cancer risks, like packs of cigarettes do.

✂ According to the report, alcohol use contributes to **100,000 cancer cases and 20,000 related deaths each year.**

How does alcohol lead to cancer?

According to the report, there are **four ways**. These are:

➤ DNA DAMAGE:

The body processes alcohol into **acetaldehyde**.

a chemical compound that **can damage DNA**
and
prevent cells from **repairing the damage**.

This can **raise the chances of mutations**
and
uncontrolled cell growth,

which play a part in the **formation of tumours**.

➤ OXIDATION & INFLAMMATION:

Acetaldehyde is converted into acetate

in a process that involves oxidation,

producing dangerous unstable oxygen-containing molecules that
damage cells and contribute to cancer-causing inflammation.

➤ RAISING RISK FROM TOBACCO:

Carcinogens from other sources,

especially particles of tobacco smoke,
can dissolve in alcohol,
making it easier for them
to be absorbed into the body.

➤ HORMONE PRODUCTION:

Alcohol consumption increases levels of some hormones, including **estrogen**, which
can increase risks for **breast and ovarian cancers**.

What types of cancers have been linked with alcohol use?

- According to the report, alcohol use increases the risk for **breast, colon and rectum, esophagus, liver, mouth, throat, and larynx cancers**.
 - > “The risk for cancers of the breast, the mouth and the throat may rise with consumption of **as little as one drink a day, or even less**,” the US Surgeon General Dr Vivek Murthy said, according to a report in The New York Times.
 - > The report highlighted that alcohol **irritates and damages the protective mucosal lining** – the moist, inner lining found in the mouth, nose, lungs, and stomach – that usually guards cells from carcinogens.

07.01.2025

FOREIGN INVESTORS SOLD ₹2,575.06 CR OF DOMESTIC SHARES ON MONDAY

Sensex, Nifty plunge over 1.5% on FPI selling, new virus scare

EXPLAINED

E Fear of weak corporate earnings

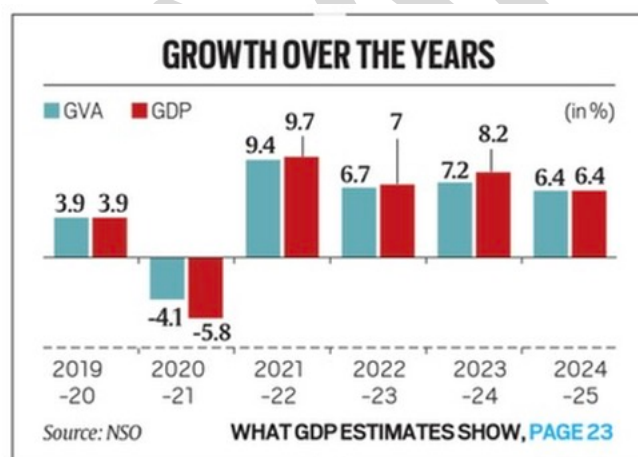
CONCERNS OVER weak corporate earnings for the third quarter, outbreak of human metapneumovirus (HMPV) and continued selling by foreign portfolio investors (FPIs) led to a sharp sell-off in the markets.

08.01.2025

GDP: FIRST HALF SLUMP WEIGHS IN ON FULL YEAR GROWTH

Growth estimate at 4-year low of 6.4% on weak manufacturing and investment

In second half of 2024-25, consumption will likely accelerate, but investment may remain flat



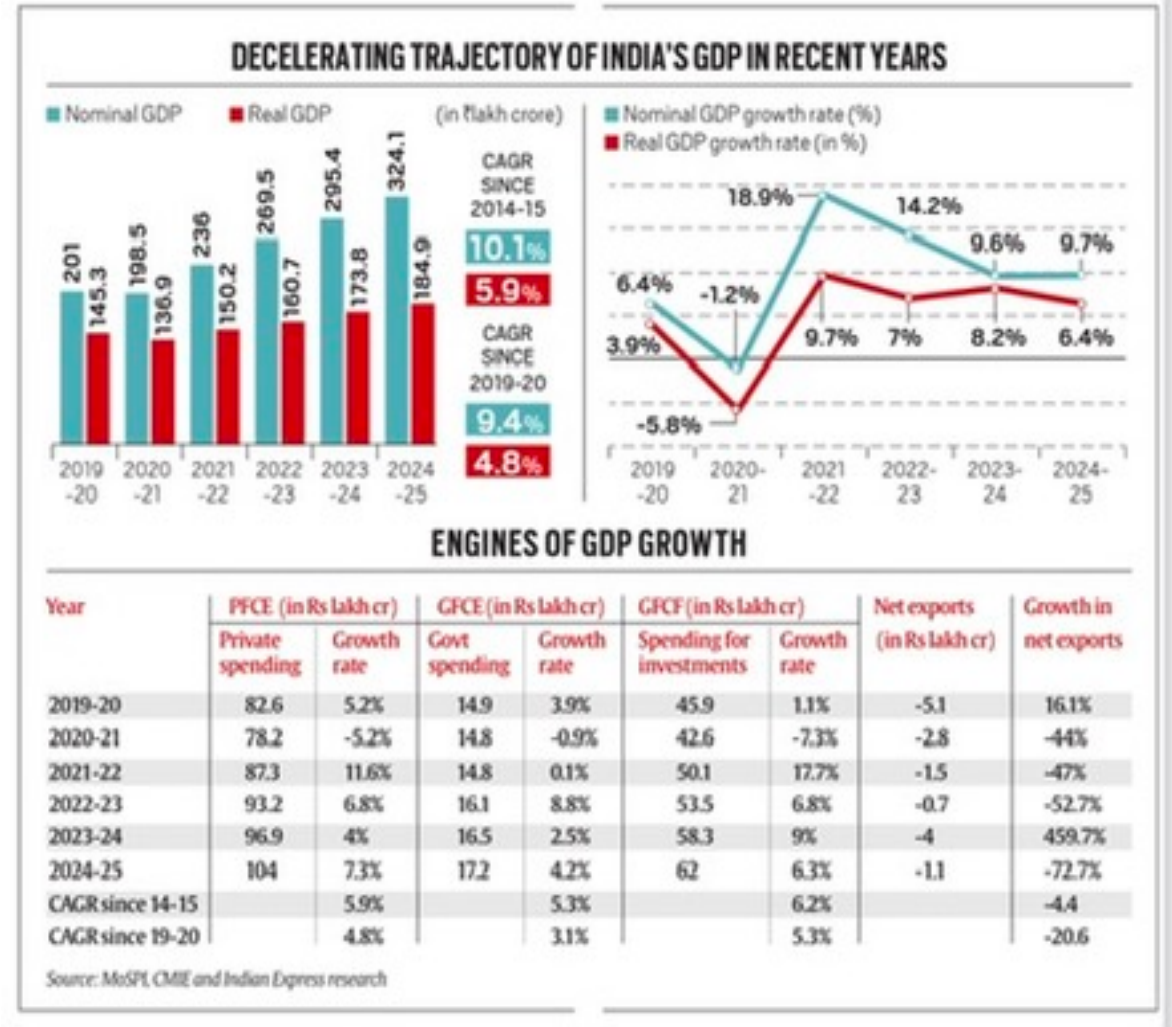
EXPLAINED

E Why growth is down

WHILE CONSUMPTION demand is set to grow at 7.3 per cent this year (4 per cent last year), investment (particularly, corporate) has not quite picked pace. This year, it is seen growing at 6.4 per cent compared with 9 per cent in FY24.

GVA AT BASIC PRICES (%)		
	2023-24	2024-25
Agriculture, Livestock, Forestry & Fishing	1.4%	3.8%
Mining & Quarrying	7.1%	2.9%
Manufacturing	9.9%	5.3%
Electricity, Gas, Water Supply, Utility Services	7.5%	6.8%
Construction	9.9%	8.6%
Trade, Hotels, Transport, Communication	6.4%	5.8%
Financial, Real Estate & Professional Services	8.4%	7.3%
Public Administration, Defence & Other Services	7.8%	9.1%
GVA at Basic Prices	7.2%	6.4%
Net Taxes	19.1%	5.9%
GDP	8.2%	6.4%

	2023-24	2024-25
Private Final Consumption Expenditure (PFCE)	4%	7.3%
Government Final Consumption Expenditure (GFCE)	2.5%	4.1%
Gross Fixed Capital Formation (GFCF)	9%	6.4%



What's holding back growth?

- GDP is calculated by **adding up all the money spent in the economy.**
- **Spending** can be divided into **four** main categories, which can be seen as the four engines of GDP growth. They are as follows:
 - 1) **Spending by individuals, or Private Final Consumption Expenditure (PFCE):**
This accounts for almost **60% of India's GDP.**
 - 2) **Spending by governments to meet daily expenditures such as salaries:** This Government Final Consumption Expenditure (**GFCE**) accounts for around **10% of GDP.**
 - 3) Spending towards boosting the **productive capacity** of the economy.
 - ✓ This could be investments by the government in building roads, companies building factories or buying office equipment, etc.
 - ✓ This is Gross Fixed Capital Formation (**GFCF**), and typically accounts for **30% of GDP.**
 - 4) **Net exports** or net spending is the results of **Indians spending on imports** and **foreigners spending on Indian exports.**
 - ✓ Since India typically imports more than it exports, this engine drags down overall GDP, and shows up with a minus sign.

➤ **PFCE:**

- > What Indians spend in their personal capacity is the most vital determinant of GDP growth.
 - If this growth rate is low, it drags down overall GDP, and dissuades the private sector from investing in the economy.
- > This spending is **expected to grow** by 7.3% this year. **But** the crucial number is the CAGR which is **just 4.8% since FY20.**

➤ **GOVT SPENDING:**

- > Unlike other players in the economy, governments can potentially spend in excess of their incomes.
 - When the rest of the economy is struggling, governments are expected to borrow money (and/ or print it) and spend it in a manner that reenergizes the economy.
 - However, the government's own spending has grown just 4.2% in the current year, and an average of 3.1% since the start of 2019.

➤ **PRODUCTIVE CAPACITY:**

- > Spending towards productive capacity increases
 - either because **private businesses find it profitable** to expand capacity (in the hope of selling to the public)
 - or because **governments boost capital expenditure** (spending towards physical infrastructure).

- > In the current year, this spending is expected to rise by 6.3% but over a slightly longer period, it has gone up by just 5.3% annually.
 - In fact, as the CAGR calculations show, growth of investments into the economy has been petering out since 2014.
 - This is not surprising – unless private consumption rebounds, businesses will not invest in fresh capacity, regardless of tax incentives.

➤ NET EXPORTS:

- > In most years, net exports is a negative number.
 - As such, negative growth rates in this category are a good development.
 - For the current year and in the recent past, the gap between exports and imports has reduced.

Upshot of the numbers

- On the face of it, India's economy has registered world-beating growth rates of GDP since after the Covid pandemic.
 - > But, as the data show, **a large part of India's recent high growth rates was the result of a low base of GDP**, thanks to a contraction of GDP in 2020-21.
- Over a slightly longer period, say if 2019-20 (the year just before Covid) is included.
 - > **India's real economy has grown at less than 5% per annum** – almost half the rate at which it would need to grow if it is to become a **developed country by 2047.**

Quick Notes :-

CAGR (Compound Annual Growth Rate) Formula

- ± CAGR measures your investments' average annual growth over a given period.
- ± It shows you the average rate of return on your investments over a year.
- ± CAGR is a helpful tool for investors because it precisely measures investment growth (or decline) over time.

$$\text{CAGR (\%)} = \frac{\text{Ending Value}^{(1 \div t)}}{\text{Beginning Value}} - 1$$

Ketan Parekh 2.0: Return of kingpin of 2 stock market scams, nearly 25 years apart

On Jan 2, Sebi debarred Parekh & others for alleged front-running of trades of a US-based foreign portfolio investor

EXPLAINED

E

What is front running?

FRONT RUNNING is the illegal practice of purchasing a stock based on advanced non-public information regarding an expected large transaction that will affect the price of the stock.

6.8 quake near Tibet's Buddhist holy city kills 126, rattles Nepal, Bhutan

EXPLAINED

E

21 quakes since 1950

SOUTHWESTERN CHINA, Nepal and northern India are often hit by quakes due to the collision of the Indian and Eurasian tectonic plates. Since 1950, there have been 21 earthquakes of magnitude 6 or above in what is known as the Lhasa block, the largest of which was the 6.9-magnitude quake in Mainling in 2017.

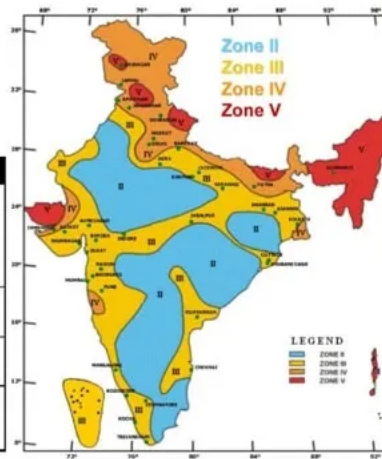
Seismic Region	No. of Earthquakes of Magnitude				Return Period
	5.0-5.9	6.0-6.9	7.0-7.9	8.0+	
Kashmir & Western Himalayas	25	7	2	1	2.5-3 yrs.
Central Himalayas	68	26	4	1	1 yrs.
North East India	200	128	15	4	<4 months
Indo-Gangetic Basin and Rajasthan	14	6	-	-	5 yrs.
Gangetic and Rann of Kutch	4	4	1	1	20 yrs.
Peninsular India	31	10	-	-	2.5-3 yrs.
Andaman & Nicobar	80	68	1	1	<8 months

Table 1: Region wise major earthquakes in India

Seismic Zone Map of India: -2002

About **59 percent** of the land area of India is liable to seismic hazard damage

Zone	Intensity
Zone V	Very High Risk Zone Area liable to shaking Intensity IX (and above)
Zone IV	High Risk Zone Intensity VIII
Zone III	Moderate Risk Zone Intensity VII
Zone II	Low Risk Zone VI (and lower)



Seismic Zones in India



09.01.2025

Thousands flee as wildfires rage out of control in Los Angeles, destroying homes

EXPLAINED What's fuelling the LA wildfire

FORECASTERS THIS week had warned of damaging wind gusts that would reach 50 to 80 mph, and even above 100 mph, in the mountains. The winds, combined with dry air, have created a critical fire-weather event in Southern California. The hills are also covered in vegetation after two rainy winters that preceded this one. "This is about as bad as it gets in terms of fire weather," forecasters said.

- **The causes of the wildfires** remain under investigation, but the prevailing conditions—**dry vegetation, shifting winds, and extremely low humidity**—have set the stage for rapid fire growth.
- Evacuation orders have affected over 100,000 residents, with areas such as *Pacific Palisades* and *Calabasas* seeing *Hollywood stars among those fleeing*.
 - The fires have also caused widespread power outages, leaving over 1.5 million people without electricity.
 - The fires' rapid spread is fuelled by powerful **Santa Ana winds**, which have made aerial firefighting operations difficult.

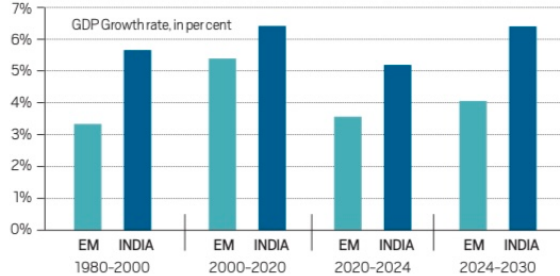
TOP 10 TRENDS IN THE US, CHINA, INDIA

Economy 2025: Here's what to expect

Investor and author Dushir Chandra speaks to economist and sociologist Dr. Annu Bora, connecting the dots, looking at the year ahead.

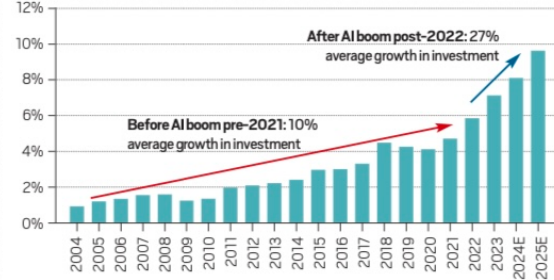
SOME KEY TRENDS TOWATCH

INDIA WILL CONTINUE TO GROW FASTER THAN OTHER EMERGING MARKETS ON AVERAGE



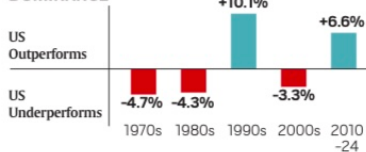
Source: National Sources, Haver, IMF, Breakout Capital.

BIG-TECH FIRMS ARE INVESTING HEAVILY TO WIN ARTIFICIAL INTELLIGENCE RACE



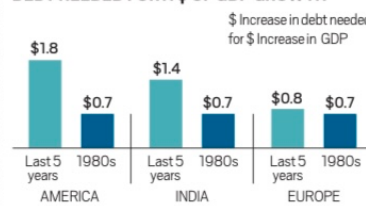
Source: Bloomberg, Breakout Capital. As of December 10, 2024. 2024 & 2025 figures are estimates.

REVERSAL OF RECENT PATTERN OF US DOMINANCE



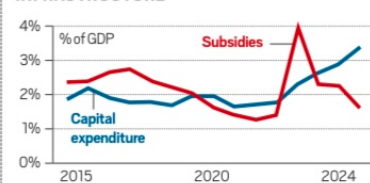
THE CHART PLOTS THE RELATIVE AVERAGE ANNUAL STOCK MARKET RETURNS IN REAL USD TERMS
Source: Deutsche Bank, UBS, DMS Database 2024, Copyright © 2022 Elroy Dimson, Paul Marsh and Mike Staunton.

INEFFICIENT US DEBT: MORE & MORE PUBLIC DEBT NEEDED FOR A \$ OF GDP GROWTH



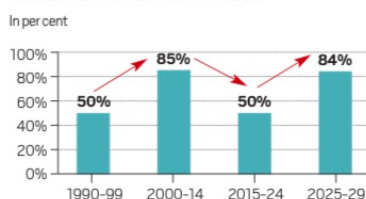
Source: IMF, Haver Analytics, Breakout Capital.

INDIA SEES INCREASED FOCUS ON INFRASTRUCTURE



Source: Budget Documents, Breakout Capital.
Note: This is shown for the FY 1Apr - 31 Mar

MAJORITY OF KEY EMERGING MARKETS GROWING FASTER THAN THE US



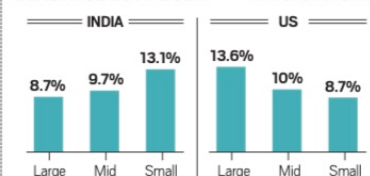
Source: Haver Analytics, IMF, Breakout Capital.

CHINA IS NOW CHEAP & ATTRACTIVE FOR INVESTMENT



Source: Bloomberg, MSCI, Breakout Capital. * Next 12 months earnings

IN INDIA, SMALL WILL NO LONGER BE BEAUTIFUL 2014-2024



Source: Bloomberg, MSCI, Breakout Capital.

PREDICTIONS SUMMARY

1 REVERSAL IN RECENT PATTERN OF US DOMINANCE: American stock market could have the first year of underperformance in a long time.

2 FISCAL DEFICIT IS AMERICA'S FATAL FLAW: Politicians are not focused on cutting back; market may put more pressure on them.

3 AMERICA WILL LOOK LESS EXCEPTIONAL: Growth rates will come off the boil rather than remain close to 3% like it's been for the last couple of years.

4 NEW STARS ARE GOING TO EMERGE: If something goes down, something else will come up. There are many large economies with minuscule investment weights.

5 CHINA IS BECOMING INVESTABLE AGAIN: Its economy may not be booming or even doing fine, but it's become so cheap that it's investable. Several 'diamonds in the rough' there.

6 IN INDIA, SMALL WILL NO LONGER BE BEAUTIFUL: Small and mid-cap stocks have had a

great run. The performance-valuation gap will narrow between the small- and mid-cap companies and the large caps.

7 OVERSPENDING ON AI WILL HURT BIG TECH FIRMS: They're overdoing it; returns may not be commensurate with spend on AI. Valuations may be questioned if profits don't grow as significantly.

8 GLOBAL TRADE WILL GROW WITHOUT AMERICA: It's already been happening, but with Donald Trump's election, it's likely to accelerate. India and others are signing more bilateral trade agreements.

9 PRIVATE FUNDING WILL SLOW DOWN GLOBALLY: Public funding will increase again, mainly led by the US. India is still at a nascent stage; private funding may or may not slow down.

10 NO MAGIC SOLUTION TO OBESITY EPIDEMIC: There are many benefits to drugs like Ozempic. But there are side effects too, and the idea that it is a magic pill will be questioned.

Executive, legislature to take call on exclusion from reservation: SC

EXPRESS NEWS SERVICE
NEW DELHI, JANUARY 9

THE SUPREME Court on Thursday said it had already given its views on the question whether persons, who had benefited from quota, should be excluded from availing further reservation, and that it is now up to the legislature and executive to decide whether it should be implemented.

"We have given our view that taking into consideration the past 75 years, such persons who have already availed benefits and are in a position to compete with others, should be excluded from reservation. But it is a call to be taken by the executive and the legislature,"

Justice B R Gavai presiding over a two-judge bench stated. The bench also comprising Justice AG Masih was hearing a plea which referred to the August 1, 2024 ruling of a 7 judge constitution bench which by 6:1 majority held that Scheduled Castes (SCs) can be sub-classified on identifiable and demonstrable data for the purpose of reservation.

Thursday's plea said the states were yet to frame such a policy though six months have passed since the judgment. The bench also comprising Justice AG Masih however said it is not inclined to entertain the matter. It allowed the petitioner's counsel to withdraw the plea to file a representation before the convened authority that could decide on the issue.

11.01.2025

In a first, selection process for next Chief Election Commissioner casts wider net

As per new law, panel of five to be sent to

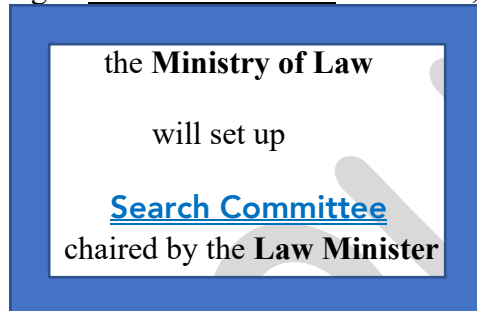
committee of PM,

Leader of Opposition in Lok Sabha,
Cabinet Minister

- Traditionally, the successor to the Chief Election Commissioner (CEC) has been the next senior most Election Commissioner.

- For the first time, as per the Chief Election Commissioner And Other Election Commissioners (Appointment, Conditions of Service And Term of Office) Act 2023, the net can be cast wider.

- According to Sections 6 and 7 of the Act,



to prepare a **panel of five names**
for the **Selection Committee**.

- The Selection Committee,

comprising the Prime Minister,
a Cabinet Minister and
the Leader of the Opposition in the Lok Sabha,

can select **from this panel**
or
consider “any other person” **from outside**.

- **Section 6** of the Act specifies this **process for the appointment** of the **Chief Election Commissioner and other Election Commissioners**.

- As per **Section 5** of the Chief Election Commissioner And Other Election Commissioners (Appointment, Conditions of Service And Term of Office) Act, 2023, *the candidates for the post would be* **current or former Secretary-level officers**.

- In **March 2023**, the **Court** ruled that

the **appointment** of the CEC and ECs would be done **by the President** on the advice of a committee comprising the Prime Minister, the Leader of the Opposition and the **Chief Justice of India**.

This arrangement was to prevail until the Parliament enacted a law for the appointments.

- The Union government eventually brought a law in **December 2023**,

which made it mandatory to appoint the CEC and ECs by way of a shortlist panel and a selection committee.

However, the Chief Justice of India was dropped as a member of the Selection Committee. The two ECs Kumar and Sandhu have been appointed as per this new provision.

- On Wednesday, the Supreme Court said it would consider in February petitions challenging the Act, particularly the exclusion of the CJI.

Quick Note :-

- ✂ Art 324
- ✂ Constitutional body
- ✂ Inception 950
 - 1950 – 92 → 1
 - 1993 → 1 + 2
- ✂ 6 years service / 65 years of age

- 61st Amd, 1988 → Voting age @ reduced to 18 years from 21 years.....thereafter first vote @ 1989

EXPLAINED

E

**Break
from
tradition?**

WHEN THE Election Commission is under scrutiny, the new law gives the Government the space to break from tradition. With the Leader of Opposition on the panel, a debate over who is next is not ruled out.

Why ISRO needs space docking

THE DOCKING-UNDOCKING capability is needed for Bharatiya Antariksh Station that will be built by bringing together five modules, the first of which is planned to be launched in 2028. The Chandrayaan-4 mission will require docking capability for its re-entry module, which will be designed to withstand the heat while entering the Earth's atmosphere. The transfer module carrying samples from the Moon will dock with the re-entry module in the Earth's atmosphere.

What breaching 1.5°C means

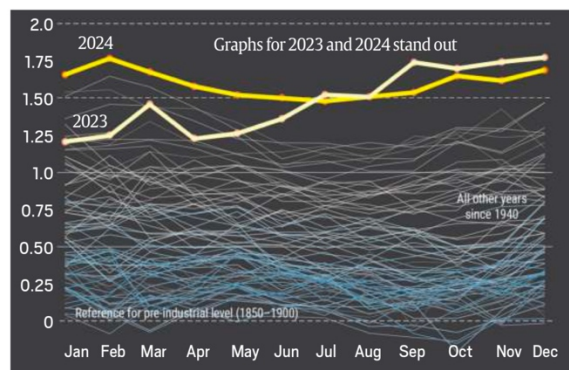
It's official: 2024 was the first year to breach the 1.5 degree Celsius threshold. With global emissions continuing to grow, this was very much expected. The planet will only get warmer in the coming years

THE YEAR 2024 has now been confirmed to have breached the 1.5 degree Celsius global warming threshold, becoming the first calendar year to do so.

The annual average temperature of Earth's surface in 2024 was 1.6 degrees Celsius above pre-industrial times (average of the 1850-1900 period), according to data from the Copernicus Climate Change Service run by the European Centre for Medium Range Weather Forecasting (ECMWF).

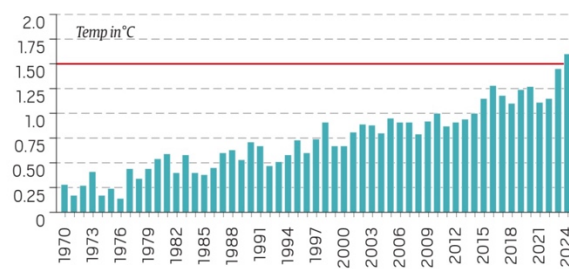
The World Meteorological Organization (WMO) used six datasets, including the one used by ECMWF, to conclude that 2024 was 1.55 degrees Celsius warmer than pre-industrial levels. Each of the six datasets found 2024 to be the warmest year ever, but not all of them recorded the warming to be in excess of 1.5 degrees Celsius.

MONTHLY GLOBAL TEMPS ABOVE PRE-INDUSTRIAL TIMES



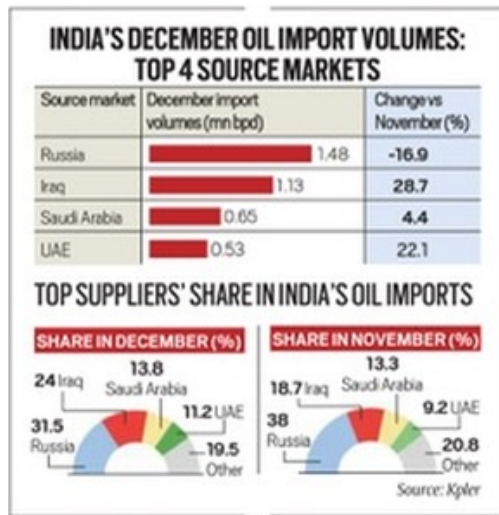
Source: Copernicus

RIISING AVG ANNUAL TEMPS ABOVE PRE-INDUSTRIAL TIMES



Source: WMO

12.01.2025



Prior to the war in Ukraine, Iraq and Saudi Arabia were the top two suppliers of crude oil to India. But as the West started weaning itself off Russian energy supplies following Moscow's February 2022 invasion of Ukraine, Russia started offering discounts on its crude and Indian refiners started snapping up the discounted barrels.

As the world's third-largest consumer of crude oil with a high import dependency level of over 85 per cent, India is extremely sensitive to oil prices. Although trade sources have indicated that discounts on Russian crude have shrunk over time, Indian refiners have evidently remained keen on buying Russian oil as given the high import volumes, even lower discount levels lead to significant savings.

14.01.2025

What is the Genome India project? Why does it matter?

- The **Department of Biotechnology** recently announced *a new platform and framework for sharing its human genome dataset*, sequenced under the Genome India project.
- Comprising 10,000 genome sequences of healthy individuals from 99 ethnic populations in the country, this dataset has helped create a baseline map of India's genetic diversity.
 - The second phase of the project will see researchers sequence genomes of people with specific diseases.

What is a genome? How are genomes sequenced?

- Every **individual inherits from their parents an instruction manual that decides how their body develops and functions** – from their height and the colour of their hair, to the diseases they may inherit or are predisposed to.
 - **This manual, known as the genome**, is made of **twisted paired strands** of **deoxyribonucleic acid**, commonly known as **DNA**.
- Each strand of DNA comprises

four chemical units, or bases, denoted by the letters A,C,G and T.

- Just like the order of letters determines the meaning of a word, the order of these bases determines the meaning of the information encoded in the DNA.
- Various combinations of these bases – there are **around three billion pairs in the complete human genome** – thus determine the unique genetic makeup of each individual.

➤ **Sequencing** simply refers to

determining the **exact order of the bases** in a strand of DNA.

- To do this, researchers first **extract genetic information from blood** – virtually every **single cell** in the body contains a complete copy of one's genome.
 - But handling the entire genome is difficult.

→ Researchers thus

- 1) cut the genome up into smaller pieces,
- 2) tag these pieces, and
- 3) decode these smaller chunks of genetic material.

This information is then re-assembled using the tags to create a whole genome.

What is the Genome India project? Why is it important?

➤ With some **4,600 distinct populations** spread across the country, **India is genetically very diverse.**

→ The **Genome India project**, approved in **2020**, aims to capture this diversity.

- Researchers from 20 scientific institutions have come together to sequence 10,000 genomes under the project – the Department of Biotechnology aims to eventually sequence up to a million genomes.

➤ This can be helpful in a number of ways.

→ It can help **identify genetic basis or risk factors for various diseases**, which can in turn be used to develop **targeted therapies and diagnostic tests.**

- **Newer therapies** for several diseases work by **modifying, deleting, or adding certain genes**, which makes it important to first identify the genes that lead to certain diseases.

→ Of the 135 million genetic variations identified in the 10,000 genomes sequences so far, some seven million were not found in other global databases. A uniquely Indian dataset may thus help identify specific genetic variations found in Indian populations.

→ This may further help scientists identify the **frequency** at which certain **genetic variations, which are known to cause disease**, appear in the population, and thus recognise how common a disease might be.

- For example, the **MYBPC3 mutation** known to lead to cardiac arrest at a young age is found in 4.5% of the Indian population but is rare globally.

→ An Indian database can *also help identify resistance-indicating variations* – *the genes (or lack thereof) that might make certain medicines or anaesthetics ineffective in certain populations.*

- For instance, people belonging to the **Arya Vyasa community of South India** lack a certain gene that precludes them from properly processing **common anaesthetics**, *which can even have fatal effects on them.*

The urea success story

As many as six new plants — with a seventh in the pipeline — have been commissioned at a cost of more than Rs 60,000 crore since 2019. All of these plants are in the 'new Green Revolution' states

AMID SHORTAGES of di-ammonium phosphate (DAP) and a general lack of investments in manufacturing, the urea industry has seen significant installation of new production capacities and progress towards achieving the government's goal of *atma nirbharta* (self-reliance).

Between 2011-12 and 2023-24 (April-March), India's domestic urea production has risen from 22 million tonnes (mt) to 31.4 mt, as imports have fallen from 7.8 mt to 7 mt after peaking at more than 9.8 mt in 2020-21. The current fiscal has so far seen a further 31.7% drop in imports (Table 1), which could end up below 5 mt — the lowest since the 4.7 mt of 2006-07.

TABLE 1

UREA: PRODUCTION VS IMPORTS

(in lakh tonnes)

	Production	Imports		Production	Imports
2011-12	219.92	78.34	2019-20	244.55	91.21
2012-13	225.87	80.44	2020-21	246.03	98.26
2013-14	227.19	70.88	2021-22	250.76	91.36
2014-15	225.93	87.49	2022-23	284.95	75.80
2015-16	244.61	84.74	2023-24	314.09	70.42
2016-17	242.01	54.81	Apr-Nov '23	208.84	47.65
2017-18	240.26	59.75	Apr-Nov '24	205.07	32.55
2018-19	238.99	74.81			

Source: The Fertiliser Association of India

TABLE 2

RECENTLY COMMISSIONED UREA PLANTS

(in thousand tonnes)

Company	Plant/Location	Start Date	Capacity	Production
Chambal Fertilisers	Gadepan-III	Jan 2019	1,270.5	1,384.2
RFCL	Ramagundam	Mar 2021	1,270.5	1,114.5
Matix Fertilisers	Panagarh	Sept 2021	1,270.5	1,498.7
HURL	Gorakhpur	Apr 2022	1,270.5	1,350.1
HURL	Barauni	Oct 2022	1,270.5	1,057.2
HURL	Sindri	Nov 2022	1,270.5	1,143.8

Note: Capacity and production are in thousand tonnes. Production is for 2023-24. Gadepan is in Rajasthan's Kota district; Ramagundam is in Peddapalli, Telangana; Panagarh is in Paschim Bardhaman, West Bengal; Gorakhpur is in UP; Begusarai is in Bihar; Sindri is in Dhanbad, Jharkhand.

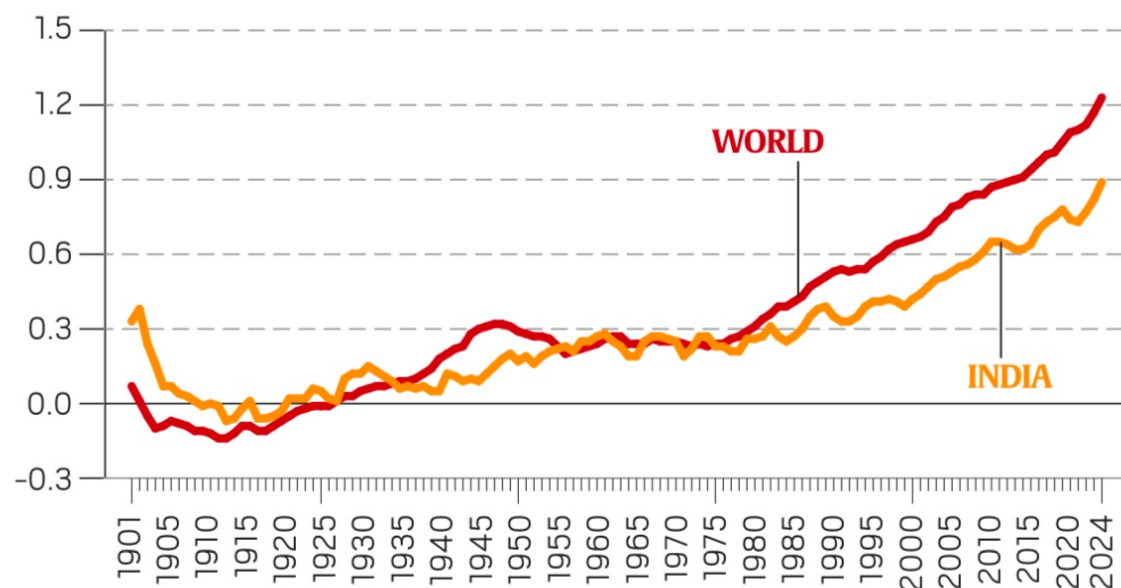
15.01.2025

Why India is warming slower

In 2024, average temperature over India was 1.2 degrees Celsius higher than average of 1901-1910. This is lower than 1.6 degrees Celsius over global land surface from pre-industrial times.

TEMPERATURE DEVIATIONS IN INDIA AND WORLD

10-year running averages. For example, temperature rise plotted against the year 1960 is actually the average of temperature rise between 1950 and 1960



Source: IMD and WMO

- The World Meteorological Organization (WMO) last week declared **2024 as the warmest year on record.**

✓ The average annual mean temperature of the Earth's surface

during the year

was more than 1.5 degrees Celsius higher than pre-industrial levels (average of the 1850-1900 period).

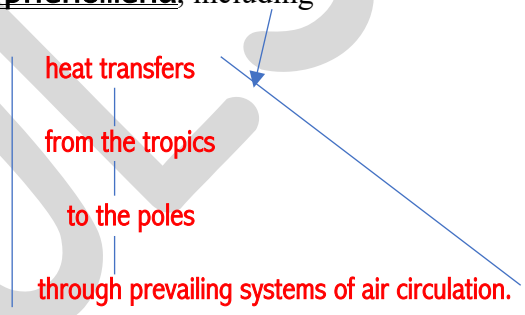
- **2024 was the warmest for India as well**, the India Meteorological Department (IMD) announced earlier this month.

- ✓ However, the extent of warming over India is very different from the world as a whole.
 - The IMD said 2024 was 0.65 degrees Celsius higher than normal.
 - The normal, in this case, is the average for the 1991-2020 period. (not pre-industrial)

- The two pieces of data that represent the warming over India and the world as a whole in 2024 cannot be directly compared.
 - ✓ **That is because of the difference in baselines.**
 - The IMD does not have temperature data over India for the 1850-1900 period to facilitate a straight comparison.
 - **Its dataset begins from 1901.**

Reasons for lower warming - India

- The 1.2 –degree-Celsius warming over India is considerably less than the 1.6 –degree-Celsius, or higher, that has been experienced over the global land surface.
 - ✓ This is not surprising. But it does not mean that the threat of climate changes is less over India compared to other areas.
- **India** is located in the **tropics**, quite close to the equator.
 - ✓ The **increase** in global temperature has been more pronounced in the **higher altitudes**, near the equator.
 - This is attributable to a complex set of atmospheric phenomena, including



heat transfers
from the tropics
to the poles
through prevailing systems of air circulation.
- **Most of the global landmass lies in the higher altitudes.**
 - ✓ The polar regions, particularly the Arctic, have seen substantially higher warming.
 - The Arctic has seen its temperature **increase by at least two times** compared to the global average, according to the Intergovernmental Panel on Climate Change (IPCC), the **United Nations body** that advances scientific knowledge about climate change.
 - In the **Arctic**, current **annual mean temperatures** are already **about 2 degrees Celsius higher** than pre-industrial levels.
- Another reason contributing to higher temperatures rise in the polar regions is what is known as the **'albedo' effect**.
 - ✓ The **ice cover** in the Arctic is **melting**, exposing more land or water to the Sun.
 - Ice **traps less heat, and reflects most** of the solar radiation compared to land or water.
- The greater concentration of **aerosols, or suspended particles**, in the atmosphere over the Indian region also impacts temperature rise.

✓ **Aerosols**, in general, have a cooling effect as they **scatter the solar radiation back into space.**

- Aerosols also **affect cloud formation** which, in turn, affects how much sunlight is absorbed or reflected.
- Being **located in the tropical region, India sees a greater amount of dust.** However, this is also leading to a huge amount of air pollution.
- The particulate matter and aerosols have a small **unintended consequence of lowering the temperature rise.**

AEROSOLS

Definition

A disperse phase system in which very fine solid dust particles or liquid droplets get dispersed in the propellants which act as a continuous phase.

*Aerosols can be natural or anthropogenic.

-*Natural aerosols: fog, dust, forest exudates, geyser system*

-*Anthropogenic : Haze, smoke, particulate air pollutants.*

* Aerosol particles like dust play an important role in the precipitation process, providing the nuclei upon which condensation and freezing takes place.

*They effect climate by reflecting or absorbing solar radiation and enhancing the brightness and thus reflectivity of clouds.

*They also participate in chemical processes and influence the electrical properties of the atmosphere.

Size

True aerosol particles range in diameter from a few millimicrometers to about 1 micrometre.

MAKE AMERICA GREAT AGAIN MOVEMENT SEEMS TO BE INTENTIONALLY SOWING DISCORD WITHIN US ALLIES

A new age of US interference in Europe — Musk, Trump's MAGA movement

KATRIN BENNHOLD
LONDON, JANUARY 13

FOR THE past decade or more, Europe's governments have been trying to resist covert influence operations from adversaries like Russia and China.

Now they have a very different challenge: fending off overt efforts by Elon Musk and Donald Trump's MAGA (Make America Great Again) movement to seize territory, oust elected leaders and empower far-right parties.

Even before he retakes office, Trump is making threats to ac-

quire the territory of NATO allies like Canada and Denmark. And Musk, the president-elect's biggest financial supporter, is using his social media platform X to bring the far-right Alternative for Germany party into the mainstream and smear the leaders of Britain's center-left Labour Party.

This is not the first time a Trump ally has attempted to build a bridge with the European far right. In 2018 and 2019, Trump adviser Steve Bannon held meetings with far-right politicians across Europe. But the political landscape now is very different. The governments of Germany and France



US President-elect Donald Trump with Elon Musk in New York in November 2024. *NYT file*

Prime Minister Keir Starmer, whose Labour Party is in power, was head of public prosecutions.

According to British media reports, Musk is also considering a \$100 million donation to Britain's far-right Reform Party, which would be the country's largest political donation ever. The party's leader, Nigel Farage, one of the chief campaigners for Brexit, has met Trump several times, most recently in Florida last month.

"MAGA hates Starmer," the former Trump administration official said. "MAGA loves Meloni," he added, referring to Italy's right-wing PM Giorgia Meloni, "as long

as she meets her deportation targets." In Germany, which is holding snap federal elections next month, Musk is encouraging voters to vote for the far-right AfD, offering it the legitimacy that has long been denied to a party under surveillance by Germany's domestic intelligence service for its links to neo-Nazis. Germans won't vote for the AfD just because an American billionaire ads them to.

But social media is a tool that can shift public opinion, taking ideas that were once considered extreme and inserting them into the mainstream over time.

US influence campaigns in Musk's provocations in Europe may be designed for maximum chaos rather than electoral success. In Britain, he trashed Nigel Farage, leader of the far-right Reform Party, after Farage declined to endorse Musk's demand that a far-right agitator be released from prison.

NYT

16.01.2025

How and why are plants grown in space: Takeaways from ISRO's success

The Lobia (black-eyed pea) seeds that the Indian Space Research Organisation (ISRO) sent to space on December 30 as a part of its Compact Research Module for Orbital Plant Studies (CROPS) germinated last week.

Why grow plants in space?

- As humans venture out on lengthy space missions to colonise celestial bodies like Mars and the Moon, **space-grown plants can provide a sustainable food source.**
 - With **minimal scope of restocking supplies**, astronauts cannot simply rely on a **limited stock of multivitamins** during missions that may go on for years.
 - Besides, **pre-packaged vitamins break down and lose their nutritive value** over long periods of time.
- Since **plants release oxygen during photosynthesis**, growing them in space can help **keep the air aboard spacecraft breathable.**
 - “Plants can recycle carbon dioxide and organic waste, creating a closed-loop life support system,”

Why is it hard to grow plants in space?

- The *most significant challenge* is **micro-gravity**, the condition in which people or objects appear to be weightless.
- **The lack of gravity precludes plants' roots from growing downwards**, in addition to making nutrient delivery a difficult task.
 - *Since water tends to cling to any surface it touches in microgravity, when sprayed onto the base of a plant, **it does not trickle down to the roots** where it would be absorbed.*
- Plants grown in space also need **to be protected from the high levels of radiation** that **can damage their DNA and hinder growth**, and insulated from temperature fluctuations – often hundreds of degrees – that are normal in space.
- **Light conditions**, especially in the outer Solar System where sunlight is scarce, pose another challenge.
 - **Without light, photosynthesis stops**, and plants begin to consume more oxygen than they produce.

How are plants being grown in space?

- *Scientists have so far **grown plants in space on a fairly small scale.***
 - The **space garden** aboard the International Space Station, known as ‘**Veggie**’ **or the Vegetable Production System**, is the size of the average carry-on bag.

- It typically holds **six plants**.
- There are several ways in which plants can be grown in space.

The most common is **hydroponics**.

Water and nutrients in hydroponically grown plants are delivered via liquid solutions, rather than through the soil.

- Plants can also be grown **aeroponically**, which eliminates the need for soil or any other medium.

→ **This method**

reduces water usage by 98%,
fertiliser usage by 60%, and
eliminates the need for **pesticides altogether**.

"Plants grown in aeroponic systems have been shown

To absorb more minerals and vitamins,
making them
healthier and potentially more nutritious".

- Plants can be grown in space in **soil-like media**.

How did ISRO grow **'lobia'** in space?

- "The **ISRO CROPS** box is like a mini greenhouse".

✓ It has a

soil-like medium,
lobia,
water,
sunlight-mimicking lights, and
Earth-like air.

- ✧ **"The only thing different is gravity**, at around 0.01g", or 1% of the gravitational strength on the Earth's surface.

- **For the soil-like medium**, ISRO used some **highly porous clay comprising tiny pellets**.
 - The **porosity** helped absorb and retain water.
 - The **pellets** consisted of a water-activated slow-release fertiliser, which was to **provide nutrients** to the plant in a controlled manner over a period of time.
- **For photosynthesis**, ISRO used **four warm LEDs and four cool LEDs**.
 - "The lights are programmed to be **on for 16 hours and off for 8 hours**, simulating day and night conditions... These durations can be changed based on various requirements," ISRO said in a statement.

- Temperatures inside the module were regulated between 20 and 30 degrees Celsius, and Earth-like atmospheric conditions were maintained.
 - Water was injected into the soil-like medium by an electric valve operated from Earth.
- Seeds sprouted on the fourth day of the experiment, and the next day, two leaves were also visible.

What kind of plants are ideal for growing in space?

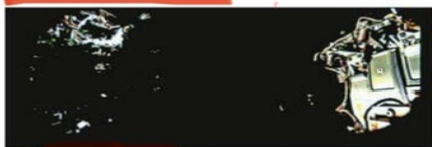
- Plants are selected based on their growth rate, nutrient content, and compatibility with space farming systems.
 - ✓ Leafy green vegetables like lettuce, spinach, and kale, which grow quickly, require little space, and are rich in nutrients, are ideal space plants.
 - ✓ Beans and peas are also cultivated since they are **protein-dense** and can fix nitrogen in the soil-like medium, improving nutrient cycles.
 - ✓ Radishes and carrots grow well in **compact spaces**...
 - ✓ Wheat and rice are grown for **long-term sustenance** in space habitats.”
 - ✓ Fruits such as tomatoes and strawberries can also be grown.

17.01.2025

SPADEX MISSION A SUCCESS

Satellites dock in space, ISRO gets a boost for Moon & beyond

India becomes fourth country after US, Russia and China to achieve feat



The Chaser and Target satellites during the docking. PTI

- The Indian Space Research Organisation (ISRO) on Thursday morning docked two satellites in space,
 - ↓
 - demonstrating a capability that is critical to executing the more ambitious future missions like the building of a permanent space station or landing humans on the Moon.

- With the successful docking of the two satellites –

↓
Chaser and Target –

↓
as part of the Space Docking Experiment (SpaDeX).

↓
India has become the fourth country after the US, Russia and China
to accomplish the feat.

- Calling it a “*historic moment*”, ISRO said on X:

“Post docking, control of two satellites as single object is successful.
Undocking and power transfer checks to follow in coming days”.

- Docking refers to

↓
joining together two or more fast-moving objects in space.

Most larger space assets,
particularly those that involve two-way journeys,
from and to Earth,
are made of several parts that are taken one at a time and integrated in space.

- Space facilities like the International Space Station,

as big as a typical six-bedroom house in the United States,
cannot be launched into space at one go.

→ Similarly, spacecraft taking humans to the Moon are composed of multiple components.

A part of the spacecraft has to detach and land on the Moon,
and
then re-integrate on the return journey.

- Satellites in space move at very high speeds.

→ For docking to happen, they have to move at exactly the same speed, so that relative to each other, they are almost stationary.

→ Docking, thus, is an extremely complicated process requiring very high precision manoeuvres.

- The smallest of errors can lead to complete destruction of the satellites.
- This delicate manoeuvre had to be put off at least twice in the last few days because the two spacecraft, which had been launched into space on December 30 last year, were not able to achieve ideal conditions for docking.
- The SpaDeX mission consisted of **two relatively small spacecraft**, called **Target** and **Chaser**, each weighing about 220 kg, that were launched together into space. They were injected with slightly different force to allow them to attain a separation of about 20 km, while keeping them in the same orbit around Earth, about 470 km from the surface.
- The satellites were brought progressively closer, in stages, before being docked together on Thursday. The two satellites which carry several scientific payloads will eventually be undocked to carry out their science objectives over next two years.

HOW **FTI-TTP WILL ENSURE FASTER, SMOOTHER IMMIGRATION CLEARANCE**

- Union Home Minister Amit Shah on Thursday inaugurated the **Fast Track Immigration-Trusted Traveller Programme (FTI-TTP)** at the Sardar Vallabhbhai Patel International Airport in **Ahmedabad**.
- FTI-TTP was **first introduced** at the Indira Gandhi International Airport in **Delhi** last June.

It has since been implemented at the airports in **Mumbai, Chennai, Kolkata, Bengaluru, Hyderabad, and Kochi.**

What is FTI-TTP?

- The program seeks to simplify international travel by accelerating the immigration pathway by using automated gates. It will eventually be implemented in 21 airports across India.
- At the moment, the **first phase** of FTI-TTP seeks to facilitate secure but faster and smoother immigration clearance for the **Indian Nationals and Overseas Citizen of India (OCI) cardholders.**
 - The **next phase** will extend these facilities to foreign travellers.
- The **Bureau of Immigration** under the Ministry of Home Affairs (MHA) is the **nodal agency** for the program, which is currently agency for the program.
- This facility is currently available **free of cost for passengers.**

How does FTI-TTP work?

- Those interested have to **first enroll on an online portal on the MHA's website.**

They have to provide their details, and upload required documents.

After **necessary verification**, a **white list of 'Trusted Travellers'** will be generated and fed for implementation through **e-gates** at the airport.

- **Biometrics** of these travellers

will be captured

either at Foreigners Regional Registration Office (FRRO)
or
at the **airport**,

at the time of the **registered traveller's first passage.**

- ✂ The registration will be **valid till**

the validity of the passport,
or
for a period of five years, } **whichever is earlier.**

- Registered travellers will simply have to scan their boarding pass and passport at the airport's e-gate, and authenticate their biometrics.
- "On such authentication, the e-gate will open automatically and immigration clearance will be deemed to have been granted".

What are the documents required for FTI-TIP registration?

- The following **documents** have to be **uploaded** on the program's **online portal**:
 - ✓ A **passport size photograph** in which the **applicant's face**, including ears, take up three-quarters of the area of the image. The image should be **no more than six months old**, and the **backdrop** of the image should be **plain white**.
 - ✓ A **scanned copy of a passport** with **at least six months of validity**. The scan should include the **front page** comprising the individual's photo and personal information, and **last page** giving family details.

- ✂ **For OCI cardholders**, a scanned copy of the OCI card – both the first and the last pages, posted separately – is also required.

18.01.2025

Why space weather is key to the successful docking of satellites

- Favourable space weather was instrumental in the success of the Indian Space Research Organisation's (ISRO's) first ever "docking mission" on Thursday.
 - The Space Docking Experiment (or SpaDex) made India only the fourth country to achieve the technologically challenging feat of bringing together two fast-moving satellites in space.
- **Docking manoeuvres will be needed in future space missions like Chandrayaan-4 or to establish *Bharatiya Antriksha Station*, *India's own space station*.**
 - In these missions, multiple components will be sent to space separately before being brought together in space.

What is space weather?

- The Sun's hot outer atmosphere, known as the **solar corona**, is constantly spewing electrically charged gases and particles into space.
 - These so-called solar winds travel at speeds of millions of kilometers per hour, and reach the farthest parts of the Solar System, creating space weather.
- The frequency and intensity of solar winds fluctuates
 - based on the **solar activity cycle**, which refers to a periodic 11 year change in the Sun's activity, measured on the basis of **sunspots** observed.
- ✂ **Sunspots are indicators of solar activity** – the more the activity, the more hazardous the space weather.
- The ongoing solar cycle entered its maximum phase in November 2023 – and we are currently in the midst of an extended period of heightened solar activity.

How does space weather impact satellites and spacecraft?

- "Precision docking is very **challenging**, even under normal circumstances.
 - During severe space weather, when the space environment is disturbed, the task becomes even **more difficult**".
- "Enhanced high energy radiation associated with strong flares from the Sun can blind sensors and interfere with electronic control systems.
- **Magnetic storms from the sun**, known as **coronal mass ejections**, or very high speed solar wind streams, can disturb the space environment resulting in loss of communication, and positional errors".

- Docking missions **require to spacecraft to have negligible relative velocity between them, and their docking ports to be precisely aligned.**
 - Any kind of inclement space weather, thus, introduces a whole new set of **uncertainties** which are challenging to handle.
 - In the days leading upto the docking exercise, “there were sunspots and other magnetic structures on the Sun,” “that Sun certainly co-operated.”
- The SpaDex mission also **underscores the need for investing in improved space weather forecasts.** Having space weather forecasts in near real time is crucial especially when “critical space manoeuvres are being planned during this solar maximum phase”.

20.01.2025

WHAT IS THE **SVAMITVA SCHEME, WHO BENEFITS FROM IT AND HOW**

- Prime Minister Narendra Modi on Saturday said once property cards under the Centre’s SVAMITVA scheme have been distributed in all the villages of the country, it could unlock economic activity worth over Rs 100 lakh crore.
- The Prime Minister was addressing an event to distribute over 65 lakh property cards to property owners in over 50,000 villagers through video conferencing.

What is the scheme?

- The acronym SVAMITVA stands for **Survey of Villages and Mapping with Improved Technology in Village Areas.**
 - ✓ It aims to provide a ‘record of rights’ to those having houses in villages, and issue them a property card.
 - ✓ The plan is to survey all rural properties using drones and prepare GIS-based maps for each village.
 - ✓ The scheme **was launched** by PM Modi on National Panchayati Raj Day, on April 24, **2020**.
 - ✓ Distribution of property cards began on October 11 of that year.

What is the benefit of the card?

- According to the **Ministry of Panchyati Raj,** the scheme benefits rural residents in many ways.
 - ✓ **First,** it enables rural households to use their property as a financial asset for taking loans and other financial benefits.
 - ✓ **Second,** it helps in determination of property tax, which accrues to the Gram Panchayats directly in states where they are empowered to collect such taxes.
 - The cards help increase liquidity of land parcels in the market and increase the financial credit availability to the village.

- ✓ The scheme also paves the way for creation of accurate land records for rural planning.
 - All the property records and maps are available at the Gram Panchayat level, which helps in **taxation of villages, construction permits, elimination of encroachments**, etc.

How far has the scheme progressed?

- Back in 2020, the scheme was implemented as a pilot project in about 1 lakh villages across nine states – Haryana, Karnataka, Madhya Pradesh, Uttarakhand, Punjab, Rajasthan and Andhra Pradesh. The aim was to cover all 6.62 lakh villages in the country by the end of financial year 2023-24.
- Recently, an official statement said, “Drone survey has been completed in over 3.17 lakh villages, which covers 92% of the targeted villages... The schemes has reached full saturation in Puducherry, Andaman & Nicobar Islands, Tripura, Goa, Uttarakhand and Haryana. Drone survey has been completed in Madhya Pradesh, Uttar Pradesh, Chhattisgarh and several UTs.” According to the ministry, a total of 67,000 sqkm of rural abaadi (residential) land has been surveyed, valued at Rs. 132 lakh crore.

22.01.2025

What WHO, Paris pull outs mean

WHO :-

- United States President Donald Trump signed an executive order to withdraw from the World Health Organisation (WHO) on his FIRST DAY in office.
- The order gave the reasons as the
 - ✓ WHO's “mishandling of the COVID-19 pandemic”.
 - ✓ “failure to adopt urgently needed reforms”.
 - ✓ “inability to demonstrate independence from the inappropriate political influence of WHO member states”, and
 - ✓ continued demand of “unfairly onerous payments from the United States”.
- The WHO is a United Nations body
 - ✓ that works with countries to strengthen primary health care systems;
 - ✓ its guidelines help prepare government policies around the world; and
 - ✓ it helps organise programs to tackle specific diseases.

What will change in the relationship between the US and WHO?

- The executive order on “Withdrawing the United States from the World Health Organisation” highlights four key things that will happen:
 - ✓ One, any transfer of US funds and resources to the WHO will be **paused**;
 - ✓ Two, all US government personnel or contractors with the WHO will be **recalled**;
 - ✓ Three, the US will “identify credible and transparent United States and international partners to assume necessary activities previously undertaken by the WHO”; and
 - ✓ Four, the US will cease negotiations for the **pandemic treaty** the WHO is **working on**. The accord aims to better prepare countries to respond to future pandemics. “...Actions taken to effectuate such agreement and amendments will have no binding force on the United states,” the executive order says.

How is the WHO funded, and what will be the financial implications?

- The US is the biggest national contributor to the WHO’s budget, and its withdrawal will have a significant impact. The executive order made the point that “China, with a population of 1.4 billion, has 300 percent of the population of the United States, yet contributes nearly 90 percent less to the WHO.”
- WHO’s funding essentially comes in two ways –

Mandatory assessed contributions

Voluntary contributions

- > **Mandatory assessed contributions** from all its

member countries and organisations.

- *Over the years*, the assessed contributions have remained **stagnant**, and now cover less than 20% of the organisation’s budget.

USA BIGGEST CONTRIBUTOR

Mandatory assessed contributions	Voluntary contributions
1) The <u>US</u> is the biggest payer of assessed contributions, according for <u>22.5%</u> , 2) followed by <u>China</u> at <u>15%</u> .	1) the <u>US</u> is still the biggest donor, accounting for around <u>13%</u> of the total contributions in 2023, <i>China</i> accounted for only about <u>0.14%</u> of the total contributions.

	2) The <u>second biggest</u> voluntary contributor was the <u>Bill and Merinda Gates Foundation</u> , <u>close to 13%</u> .
--	---

Paris :-

Could have bigger impact than 2017, worsen funds squeeze

- US President Donald Trump decided to **withdraw** the United States

from the Paris Agreement again –

having first done so 2017 –

through an executive order signed on Monday.

→ On his first day in office, Trump also ordered an immediate revocation of all climate finance commitments made by the US.

- During his inauguration speech, Trump promised to reverse some of the climate-friendly energy policies of the last few years, and reiterated his commitment to extracting more oil and gas to meet America's energy requirements.

- Trump's predecessor (and successor)

Joe Biden had taken the US back into the Paris Agreement in 2021.

✂ The US is the only one of the 194 member countries to have withdrawn from it.

✂ Incidentally, the US had not become a party to the 1997 Kyoto Protocol as well, having refused to ratify it after signing on to it.

The predecessor to the Paris Agreement expired in 2020.

Greater impact this time

- The US is the world's second-largest emitter of greenhouse gases.

→ The Paris Agreement's objective of keeping global warming below a certain level cannot be achieved without its full participation in the common effort to reduce emissions.

- In many ways, this second withdrawal could have a more far-reaching impact on global climate action than the first.

→ The decision has come at the start of Trump's second term and is accompanied by a slew of related decisions that threaten to dismantle the entire US climate policy.

- The first withdrawal, which came six months into the Trump presidency, was rather short-lived.
 - The US has ratified the Paris Agreement just a few months before Trump had become President.
 - It has a provision that does not allow any country to withdraw within the first three years of ratification.
 - There is also a one-year wait time for the withdrawal to come into effect.
 - So, by the time the US withdrawal become effective, it was almost time to rejoin, with Biden winning the election.
- The process will be much swifter this time, and the withdrawal will come into effect next year.
 - Trump also appears more clear about his politics, having already ordered the rollback of several energy-related policies.
 - He has also sought an immediate review of all regulations that hinder the development of domestic energy resources, including oil, natural gas and coal.

Upshot

- The **biggest irritant** in this scheme of things would be the Paris Agreement requirement that the US cut down on its emissions.
 - ✓ **Trump has thus decided to do away with the agreement itself.**
 - ✓ He has long complained that international regulations on climate change have been unfair to the US because similar restrictions are not placed on China, on account of it being classified as a developing country.
- **However, the fact is the US has the largest share of historical emissions**, and therefore also the greatest responsibility to clean up – and it has not done even a fraction of what it is mandated to.
- The fallout of Trump's second term on the international climate regime will be known in due course.
 - ✓ **What appears certain is that the US would be unable to meet its 2030 emissions cut targets.**
 - ✓ It is currently attempting to reduce its emissions by **50-52% by 2030 (from 2005 level)** and by **62-66% by 2035.**
 - ✓ As of now, the US is not on track to meet its 2030 emissions goal – and four years of Trump will make it almost certain that these are not achieved.

Quick Notes :-

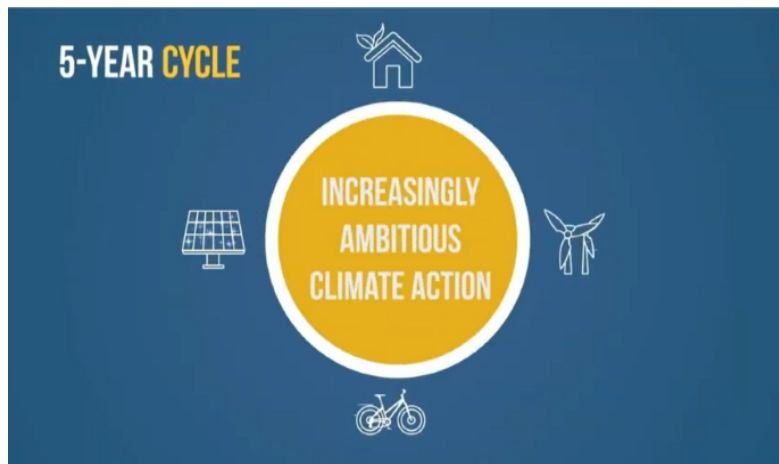
Paris Agreement :-

What is the Paris Agreement?

- The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015.
 - ✓ It entered into force on 4 November 2016.
- Its overarching goal is to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.”
- However, in recent years, world leaders have stressed the need to limit global warming to 1.5°C by the end of this century.
- That’s because the UN’s Intergovernmental Panel on Climate Change indicates that crossing the 1.5°C threshold risks unleashing far more severe climate change impacts, including more frequent and severe droughts, heatwaves and rainfall.
- To limit global warming to 1.5°C, greenhouse gas emissions must peak before 2025 at the latest and decline 43% by 2030.
- The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations together to combat climate change and adapt to its effects.

How does the Paris Agreement work?

Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. The Paris Agreement works on a five-year cycle of increasingly ambitious climate action -- or, ratcheting up -- carried out by countries. Since 2020, countries have been submitting their national climate action plans, known as nationally determined contributions (NDCs). Each successive NDC is meant to reflect an increasingly higher degree of ambition compared to the previous version.



Nationally Determined Contributions (NDCs)

In their NDCs, countries communicate actions they will take to **reduce their greenhouse gas emissions** in order to reach the goals of the Paris Agreement. Countries also communicate in their NDCs actions they will take to **build resilience to adapt** to the impacts of climate change.

Long-Term Strategies

To better frame the efforts towards the long-term goal, the Paris Agreement invites countries to formulate and submit **long-term low greenhouse gas emission development strategies (LT-LEDS)**.

LT-LEDS provide the **long-term horizon to the NDCs**. Unlike NDCs, they are not mandatory. Nevertheless, they place the NDCs into the context of countries' long-term planning and development priorities, providing a vision and direction for future development.

How are countries supporting one another?

Finance

The Paris Agreement reaffirms that developed countries should take the lead in **providing financial assistance** to countries that are less endowed and more vulnerable, while for the first time also encouraging voluntary contributions by other Parties. Climate finance is needed **for mitigation**, because large-scale investments are required to significantly reduce emissions. Climate finance is equally important **for adaptation**, as significant financial resources are needed to adapt to the adverse effects and reduce the impacts of a changing climate.

Technology

The Paris Agreement speaks of the vision of **fully realizing technology development and transfer** for both improving resilience to climate change and reducing GHG emissions. It establishes **a technology framework** to provide overarching guidance to the well-functioning Technology Mechanism. The mechanism is accelerating technology development and transfer through its policy and implementation arms.

Capacity-Building

Not all developing countries have sufficient capacities to deal with many of the challenges brought by climate change. As a result, the Paris Agreement places **great emphasis on climate-related capacity-building** for developing countries and requests all developed countries to enhance support for capacity-building actions in developing countries.



23.01.2025

What is the Indus Waters Treaty?

- The IWT was signed by **Indian and Pakistan** on September 19, 1960

to determine the **distribution of the waters of the Indus and its tributaries.**

It was **signed in Karachi** by then Prime Minister **Jawaharlal Nehru** and then Pakistan president **Ayub Khan** *after nine years of negotiations* arranged by the **World Bank.**

- Under the IWT,

India enjoys

“unrestricted use” of the **three “Eastern Rivers” (Beas, Ravi, Sutlej),**

whereas **Pakistan** controls

the three **“Western Rivers” (Indus, Chenab, Jhelum).**

- ✂ This, in effect, gives **India roughly 30% and Pakistan 70% of the water** carried by the Indus River System.

- ✂ According to Article III (1) of the treaty, “India is under obligation to let flow” waters of the Western Rivers to Pakistan.

What is the ongoing dispute about?

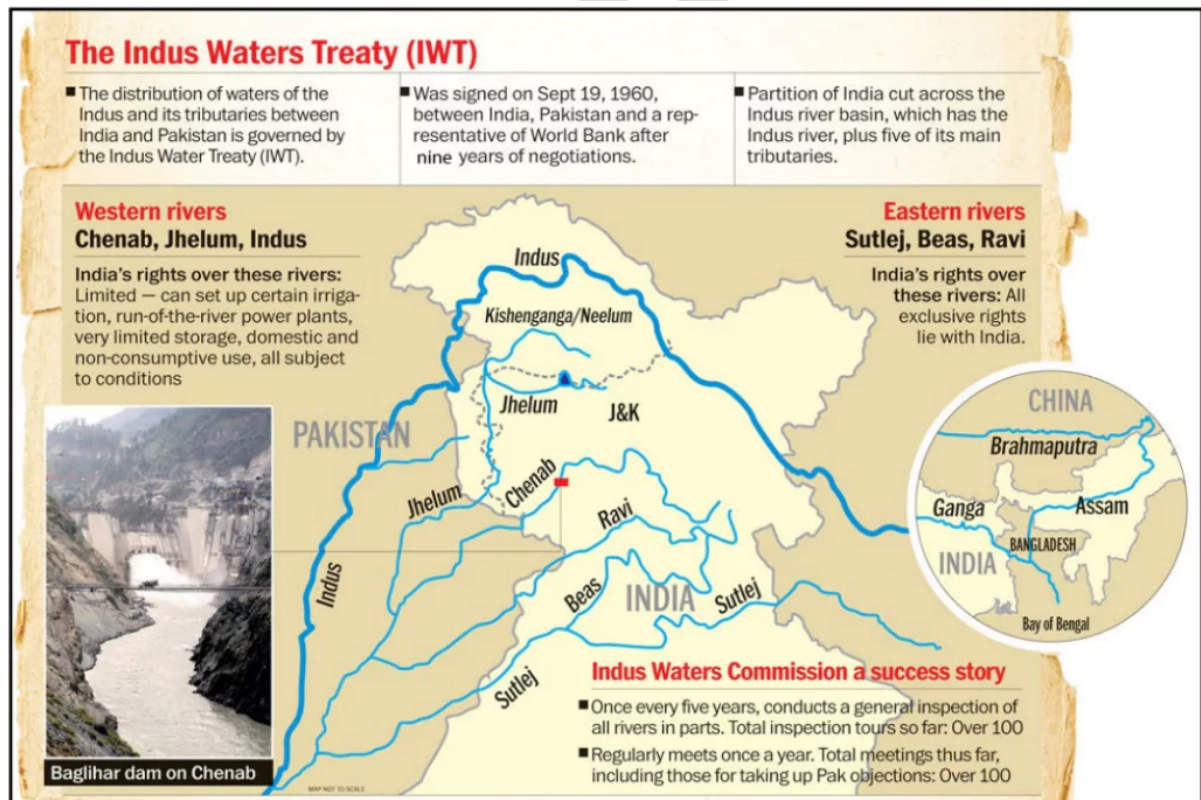
- Pakistan objects to the designed features of two hydroelectric projects currently under construction in J&K –

the **Kishenganga HEP** on **Kishenganga**,
a tributary of the **Jhelum**,

and

the **Ratle HEP** on the **Chenab**.

- ✂ Although they are “run-of-the-river” projects, which generate electricity without obstructing the natural flow of the river, Pakistan has repeatedly alleged that these violate the IWT.



DRILL, BABY, DRILL

Trump's slogan has become synonymous with his plan to boost fossil fuel production, reverse climate policies

ALIND CHAUHAN
NEW DELHI, JANUARY 22

IN HIS first speech as the 47th President of the United States, Donald Trump reiterated one of his presidential campaign slogans — “drill, baby, drill” — indicating that he will push for more oil and gas production, and consumption in the US. Trump also said he would declare a “national energy emergency” to boost US oil and gas production and bring prices down.

History of ‘drill, baby, drill’

The slogan was coined in 2008 by Michael Steele, the US politician who served as the first African American Lieutenant Governor of Maryland and chair of the Republican National Committee.

Speaking with *Carbon Brief* in March 2024, Steele said he had used the phrase to promote US independence from Middle Eastern oil. At the Republican National Convention in 2008, he told the crowd: “Let’s reduce our dependency on foreign sources of oil, and promote oil and gas production at home. Let me make it very clear: Drill, baby, drill — and drill now.”

Steele gave the slogan at a time when the US was witnessing high fuel prices due to conflict in the Middle East.

That same year, supporters of the Republican presidential candidate John McCain chanted “drill, baby, drill” during his unsuccessful campaign for the White House against Barack Obama.

The slogan also became associated with Sarah Palin, a climate-sceptic and McCain’s pick for Vice President.

Trump’s drilling plan

As part of his pro-fossil fuel agenda, Trump signed various executive orders on his first day in office. These orders:

- ✓ Rolled back restrictions on oil and gas exploration in Alaska.
- ✓ Lifted a January 2024 pause put by

the Biden administration on approvals for applications to export liquefied natural gas (LNG) facilities.

- ✓ Suspended offshore wind leasing from all areas of the outer continental shelf pending an environmental and economic review.

- ✓ Revoked a 2021 executive order signed by President Joe Biden that sought to ensure that half of all new vehicles sold in the US by 2030 were electric.

President Trump said these orders would help reduce consumer energy prices and improve US national security by expanding domestic supplies and also bolstering allies.

“We will bring prices down, fill our strategic reserves up again right to the top, and export American energy all over the world,” he said.

Although it is still unclear what declaring the “national energy emergency” plan — a presidential first — would entail, experts have suggested that it gives the President some additional executive powers.

According to the Brennan Center for Justice, a non-profit organisation which has researched emergency powers, “statutes grant the President the authority to suspend some environmental regulations or impose restrictions on crude oil exports,” a report by NPR said.

US largest oil producer

The US has come a long way from being reliant on oil from the Middle East, and it currently does not have any dearth of fossil fuels. As of now, the country is the largest producer of oil in the world, and is a net exporter of fossil fuels. Since 2016, the production of American oil has gone up by 70%.

According to the US Energy Information Administration (EIA), the US’s crude oil production reached an annual record of 13.2 million barrels per day (b/d) in 2024. The production is set to slightly increase this year, reaching 13.5 million b/d, the EIA has said.

24.01.2025

Ad hoc judges in HC: When and how can they be appointed?

Provision for appointments

Article 224A, titled "Appointment of retired judges at sittings of High Courts", states: "The Chief Justice of a High Court for any State may at any time with the **previous consent of the President**, request any person who has held the office of a Judge of that Court or of **any other High Court** to sit and act as a Judge of the High Court for that State".

Such appointees are entitled to allowances as determined by the President's order and have the jurisdiction, **powers and privileges of a Judge of that High Court**. Both the retired judge and the President of India are required to consent to the appointment.

The detailed procedure can be found in the 1998 Memorandum of Procedure (MOP) for the appointment of High Court judges, which

CJI Khanna (3 judge bench order dated 30.01.2025))

- > The Court also directed that each High Court shall keep the appointment of ad-hoc judges **2 - 5 in number but not exceeding 10% of the sanctioned strength.**
- > The ad hoc judge will sit in a bench presiding over by a sitting judge of the HC and **decide pending criminal appeals.**

25.01.2025

ISRO launch No. 100 is Nav Sat equipped with atomic clocks developed in India

- In its **100th launch**, the Indian Space Research Organisation (ISRO) is geared to send off a 2,250-kg **navigation satellite** onboard GSLV-F15 from Sriharikota on January 29 at 6.23 am, the space agency said.
- The **NVS-02** is the **second** of the **five second-generation** satellites developed by ISRO to replace the existing satellites in the country's **navigation constellation Indian Regional Navigation Satellite System.**

- The **new generation** of satellites have a **longer lifespan of 12 years** and are also *equipped with indigenously developed, more accurate atomic clocks.*
 - These also **utilise L1 frequency**, which is **most commonly used in the US Global Positioning System (GPS)**, and is likely to lead to more utilisation by smaller devices such as **fitness trackers**.
- The **January 29 launch** will be the **17th flight of GSLV**, with the **11th flight using the indigenously developed cryogenic engine.**
- The **first satellite** in the constellation **IRNSS-1A** was launched in **2013**, with a **mission life of 10 years.**
 - The next two satellites were launched in the subsequent years.
 - **Replacements were needed** for some of the satellites in the constellation even before the end of their mission life.

27.01.2025

Why J&K is issuing 'Aadhaar' to each chinar tree

- The Jammu & Kashmir government has *launched an initiative for the conservation of the region's chinara trees, which have been dwindling in number over the years.*
- The initiative involves

conducting a census of chinara trees

and

assigning each one of them a "Tree Aadhaar" number.

What is a chinara tree?

- Chinara, *also known as* **Oriental plane tree** (*platanus orientalis*), is a **maple-like tree with a huge canopy.**
 - It is found in **cool climate regions** with **sufficient water**.
 - It takes **30 to 50 years** for a chinara tree **to mature** and **150 years** for it to reach its **full size**.
 - The tree can **grow up to a height of 30 metres** while its girth ranges between 10 and 15 metres.

How did the tree get its name?

- The **name** 'chinara' was given to the tree **by Mughals** – some suggest it was Mughal emperor **Jahangir** who coined the name. It is said that the term 'chinara' came into use after someone witnessed crimson red chinara tree leaves from a distance during the autumn season, and shouted "***Che naara ast***" – a Persian phrase meaning "***what flame is that?***"

Why is the chinar significant?

- *Chinar trees, called Buen or Booyin in Kashmiri, are a major tourist attraction in the Kashmir valley during the autumn season, when their green leaves slowly change into crimson red and gold.*
 - They also find a special place in the art, literature and craft of Kashmir – local papier mache and embroidery work, hand-woven carpets, and walnut wood carvings often feature chinari motifs.

What is the chinari conservation project?

- **To cut a chinari tree, the government's nod is needed, even if the tree is on someone's private property.** However, often, the trees are cut anyway.
 - > The new project aims to make sure the government can track the status of each tree.
- **Thus, the new initiative involves conducting a census of chinari trees across the Kashmir valley and the Chenab region.**
 - > As part of the process, the government has not only enumerated chinari trees but also given a unique identity – called **Tree Aadhaar** – to each chinari tree.
 - > The **census has been done district-wise.**
 - > Each tree has been **geo-tagged.**

What is **US birthright citizenship**, how has it evolved, what is the law in **India**

- A federal judge last week temporarily blocked US President **Donald Trump's executive order** → → aimed at *curtailing the right to birthright citizenship* in the United States.
- The development came while Seattle-based US District Judge John Coughenour was hearing a suit *filed by four Democratic-led states – Washington, Arizona, Illinois, and Oregon – which had sought to block the order before it could take effect in late February.*
 - > The states argued that the order was a **blatant violation of the Constitution's 14th Amendment, which guarantees citizenship to all children born on US soil "and subject to the jurisdiction thereof".**

Birthright citizenship in India

- One of the *main challenges* that the framers of the Indian Constitution faced was *deciding whether citizenship should be based on birth or descent.*
 - Some members of the Constituent Assembly, such as **P S Deshmukh** (Indian National Congress Member from Maharashtra), **argued against birthright citizenship, stating that it would make "Indian citizenship the cheapest on earth."**

- However, other members such as **BR Ambedkar** and **Sardar Vallabhai Patel** **favoured birthright citizenship**, *and it was ultimately recognised in the Constitution.*

✂ **Article 5** of the Constitution states that every person who **was born in the territory before the commencement of the Constitution** shall be a citizen of India.

- *Subsequently,*

Parliament enacted the **Citizenship Act, 1955,**

which provided birthright citizenship
under **Section 3**
to every person born in India
on or after January 26, 1950.

- There was an **exception only for children**

born to "an envoy of a foreign sovereign power" who is not a citizen,
and
children of an "enemy alien"
when the birth takes place in an area under enemy occupation.

- **However, in 1986,**

Parliament **amended** the Act
to address the entry of migrants from
"Bangladesh, Sri Lanka and some African Countries".

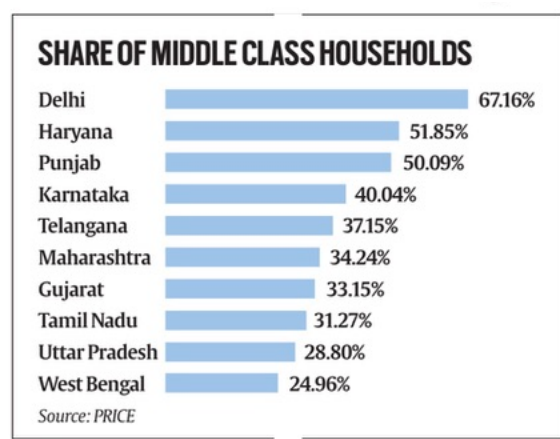
✂ *All children born after the Amendment* came into force would only become citizens *if either of the parents were Indian citizens,* **marking the end of birthright citizenship in India.**

- **In 2003,** the Act was **amended** again

to effectively state that a child would not become a citizen at birth
if one of her parents was an illegal immigrant when she was born.

QUICK NOTES:-

- ± India at present doesn't have FULL BIRTHRIGHT CITIZENSHIP
- ± Citizenship **before** the commencement of Constitution
 - **Art 5** - who has taken birth earlier to that
- ± Citizenship **after** the commencement of Constitution
 - **Citizenship Act, 1955**
 - Exception only for children
- ± **1986 - Amendment -**
 - Bangladesh, Sri Lanka and some African countries - either of the parents to be the citizen of India, to claim Indian citizenship.
- ± **2003 - Amendment -**
 - If one of the parents was illegal immigrant, would not be entitled to Indian citizenship



PARAQUAT

A 24-year-old woman in Kerala has been sentenced to death for poisoning her boyfriend with paraquat

EXPRESS NEWS SERVICE
NEW DELHI, JANUARY 26

A SESSIONS court in Kerala's Thiruvananthapuram district last week awarded the death sentence to 24-year-old Greeshma for murdering Sharon Raj, with whom she was in a relationship, in 2022. Greeshma poisoned Sharon with a chemical herbicide called paraquat.

What is paraquat?

Paraquat, also known as paraquat dichloride or methyl viologen, is one of the most commonly used herbicides in the world. It is primarily used to control the growth of weeds and desiccate crops like cotton before harvest. Paraquat's sale is banned or regulated in many countries as it is extremely toxic for humans.

How does paraquat poisoning occur?

While most poisonings occur via oral ingestion, the chemical may also be toxic upon prolonged skin contact or inhalation. According to the US Centers for Disease Control, paraquat causes direct damage when it comes into contact with the lining of the mouth, stomach or intestines. It spreads rapidly through the body, and causes adverse reactions in the lungs, liver, and kidneys. Consuming just 1 teaspoon of paraquat can cause death, according to the website of the Cleveland Clinic.

What are the symptoms?

According to the CDC, the severity of paraquat poisoning depends on the amount consumed, the mode of consumption, and the length of exposure. Effects may be compounded further by pre-existing medical conditions. Abdominal pain, swelling and pain in the mouth, nausea, and bloody diarrhoea are immediate symptoms after consumption.

diagnose symptoms after consumption.

Are there treatments for paraquat poisoning?

While there are no known antidotes for paraquat poisoning, an article published in the *National Medical Journal of India* (NMJI) in 2021 suggests the use of immunosuppression or charcoal haemoperfusion as experimental treatments.

The CDC suggests immediately swallowing activated charcoal or Fuller's earth (multani mitti), to which the chemical would stick and thus not be absorbed by the body. Hospitalisation is a must.

What are some restrictions on the use of paraquat?

In India, paraquat's use is governed by the Central Insecticides Board and Registration Committee (CIBRC), under the Ministry of Agriculture & Farmers Welfare. A 2021 notification by the Agriculture Ministry restricts its use to the following crops: wheat, rice, tea, coffee, potato, grapes, maize, rubber and apple. Paraquat may also be sprayed in certain water bodies to combat bulrush (*Typha latifolia*), water hyacinth (*Eichhornia crassipes*) and water hyacinth (*Eichhornia crassipes*).

However, various studies and news reports have found that these regulations are not strictly followed, and farmers are often untrained on how to use the chemical safely. Many farmers, in fact, disperse the herbicide by hand, without using appropriate protective equipment.

In the US, the sale of paraquat is restricted only to commercially licensed users, with a ban on personal use or use in residential areas. The chemical must be sold with a number of protections in place, such as the use of a blue dye to distinguish it from other liquids, a sharp smell, and a vomiting agent.

29.01.2025

Why Greenland's crystal blue lakes have turned brown

- A new study has revealed that over 7,500 lakes in the west Greenland have turned brown and began emitting carbon due to the extreme weather events of 2022.
- The study, '*Abrupt transformation of west Greenland lakes following compound climate extremes associated with atmospheric rivers*', was published in the journal *Proceedings of the National Academy of Sciences* last week.
- *This transformation, which typically takes centuries, occurred at breakneck speed,* according to the analysis.

What happened?

- Greenland typically experiences *snowfall between late August and September*.
 - > However, warmer temperatures in 2022 resulted in massive rainfall and the thawing of **permafrost** – frozen ground which often contains a significant amount of organic carbon.
- With record rainfall, carbon, iron, magnesium, and other elements trapped in permafrost were washed into the lakes.
 - > This transformed their physical, chemical, and biological properties.
 - > The dramatic impact was visible by July 2023.
- The changing colour also affected phytoplankton, as less sunlight penetrated the water.
 - > Phytoplankton typically consume carbon dioxide through **photosynthesis** on a scale equivalent to forests.
 - > With reduced light, this absorption declined as the breakdown of organic matter by other lake organisms increased.
- The lakes were thus transformed from carbon sinks to sources of carbon dioxide, with their **emissions rising 350%.**

Why is this significant?

- The findings follow another recent study which revealed *the amount of carbon absorbed by land has temporarily collapsed*.
 - > It concluded that *forests, plants and soil* – as a net category – **absorbed** 0.23 to 0.65 gigatonnes of carbon in 2023, the **lowest since 2003.**
- Notably, Earth's **oceans, forests, soils and other natural carbon sinks**
 - ↓
 - absorb about half of all human emissions.**
 - > As these carbon sinks *either stop absorbing carbon or become carbon sources*, the levels of atmospheric carbon are expected to skyrocket.
- The planet is already emitting unprecedented amounts of heat-trapping greenhouse gases into the atmosphere, especially through burning fossil fuels.

Quick Note :-

Permafrost

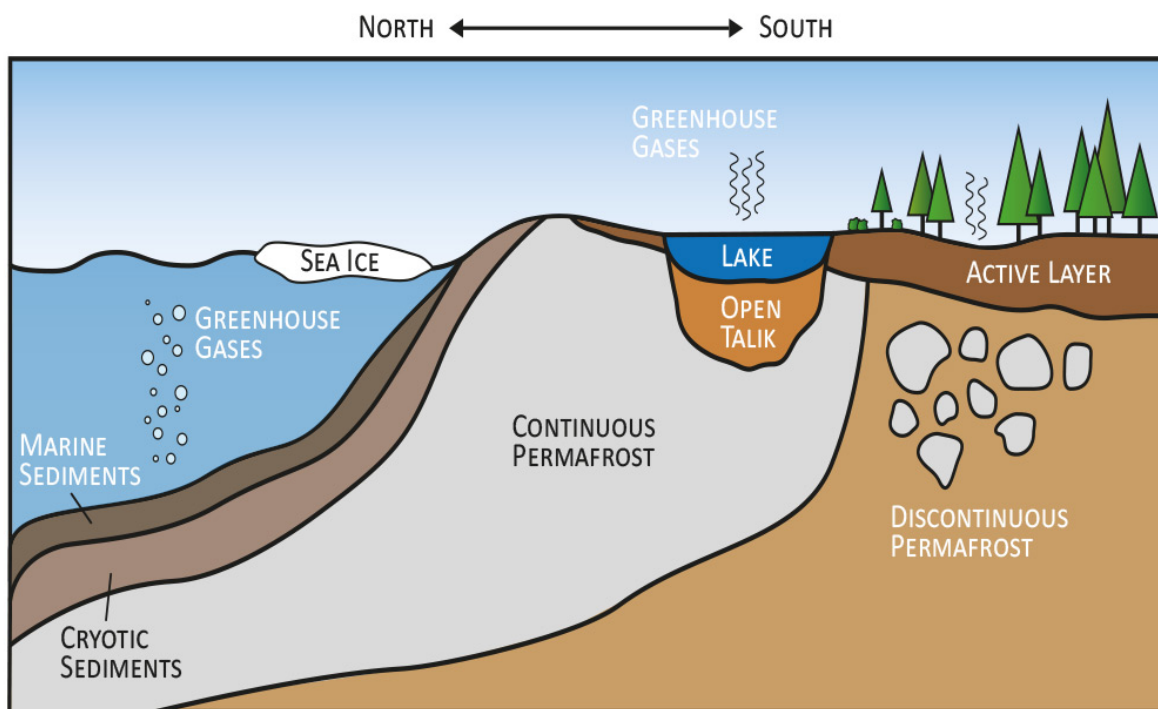
- Permafrost is soil, sand, sediment, or rock that remains at or below 0 °C (32 °F) for at least two years.
- While most is on land, there is also some subsea permafrost beneath offshore Arctic continental shelves.
- Permafrost ranges in thickness from less than 1 meter (3.3 feet) to greater than 1,500 meters (4,900 feet).

What will happen if the permafrost melts?

- A thawing permafrost layer can lead to severe impacts on people and the environment.
- For instance, as ice-filled permafrost thaws, it can turn into a muddy slurry that cannot support the weight of the soil and vegetation above it.
 - Infrastructure such as roads, buildings, and pipes could be damaged as permafrost thaws

What country has the most permafrost?

- Northeastern Siberia, Alaska and Greenland have the most solid permafrost with the lowest extent of active layer



31.01.2025

MILLIONS AROUND the world welcomed the Chinese New Year on January 29. Unlike the Gregorian calendar, the Chinese use a lunisolar calendar, which has guided the rhythms of life in China and beyond for more than three millennia. How does the Chinese calendar work?

Lunisolar calendar

The purpose of any calendar is to mark the passage of time.

A solar calendar uses the time it takes the Sun to make a single revolution around Earth (roughly 365 days) to mark a year. A lunar calendar, on the other hand, is based on the Moon's 29.53-day synodic orbit around Earth.

A 12-month-long lunar calendar adds up to 354 days, roughly 11 days short of a solar year. This means that over time, lunar calendars fall out of sync with the solar year, and consequently with seasons. This is problematic for multiple reasons, including that it makes it difficult to plan agricultural processes which are guided by seasonal changes in the weather.

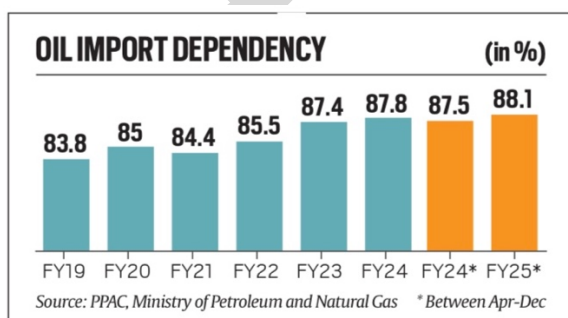
This is why many cultures — the Chinese, Buddhists, Burmese, Assyrians, Hebrews, Jains, Kurds, Nepalis, Hindus, Japanese, Koreans, Mongolians, Tibetans, and Vietnamese — have adopted lunisolar calendars, which weave in both solar and lunar cycles.

Year of the Snake: How Chinese calendar works

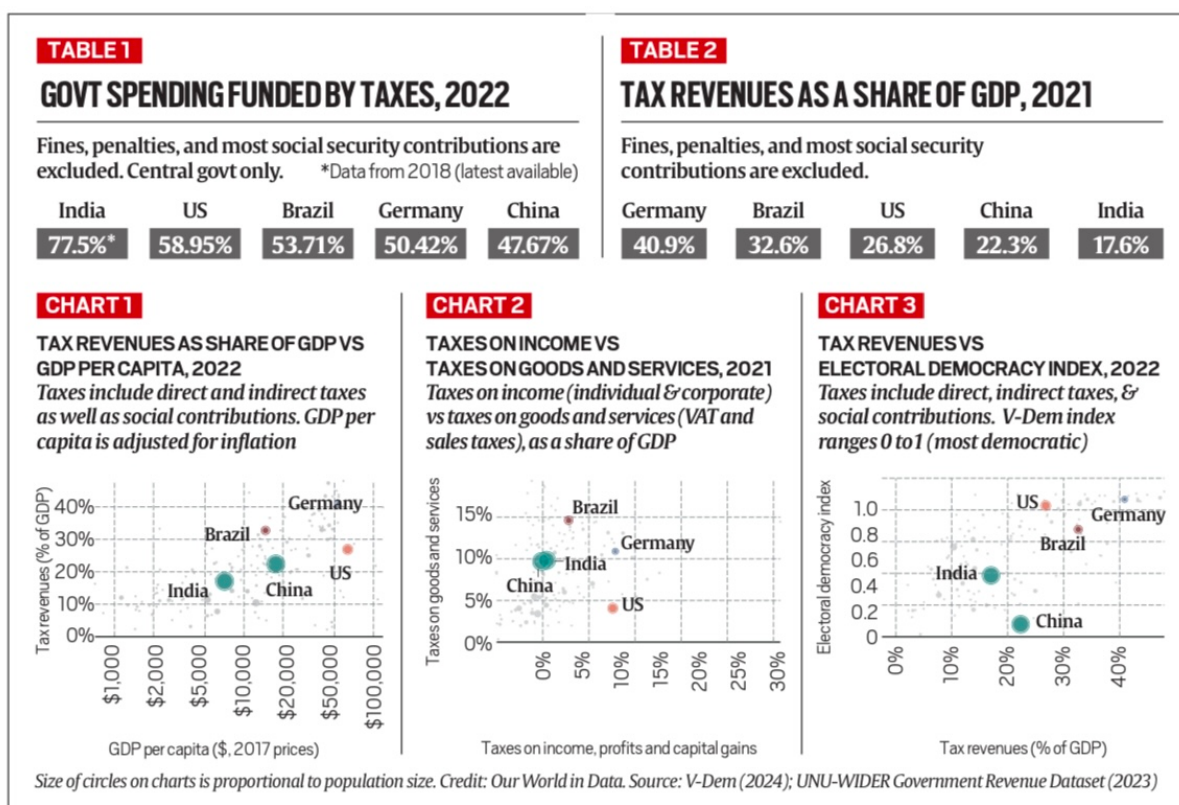
APRIL-DECEMBER DATA

India's oil import reliance up at 88.1% as demand growth pips domestic output

India's petroleum consumption



India's energy needs are consistently rising, leading to increased oil imports, fuelled by growing energy-intensive industries, increased vehicle sales, and a rapidly expanding aviation sector



DeepSeek: The Chinese AI app that has the world talking

- A Chinese-made artificial intelligence (AI) model called DeepSeek has shot to the top of Apple Store's downloads, stunning investors and sinking some tech stocks.
- Its latest version was released on 20 January, quickly impressing AI experts before it got the attention of the entire tech industry - and the world.
- US President Donald Trump said it was a "wake-up call" for US companies who must focus on "competing to win".
- What makes DeepSeek so special is the company's claim that
 - it was built at a fraction of the cost of industry-leading models like OpenAI –
 - because it uses fewer advanced chips.

- That possibility caused **chip-making giant Nvidia** to shed almost \$600bn (£482bn) of its market value on Monday - **the biggest one-day loss in US history**.

- DeepSeek also raises questions about Washington's efforts **to contain Beijing's push for tech supremacy,**

given that one of its key restrictions
has been **a ban on the export of advanced chips to China.**

- **Beijing**, however, has doubled down, with President Xi Jinping **declaring AI a top priority**. And start-ups like DeepSeek are crucial as China pivots from traditional manufacturing such as clothes and furniture to advanced tech - chips, electric vehicles and AI.

What is artificial intelligence?

- AI can, at times, **make a computer seem like a person**.
- A machine uses the technology to learn and solve problems, typically by being trained on massive amounts of information and recognising patterns.
- **The end result is software** that can have conversations like a person or predict people's shopping habits.
- **In recent years, it has become best known as the tech behind chatbots such as ChatGPT - and DeepSeek - also known as generative AI.**
- These programs again learn from huge swathes of data, including online text and images, to be able to make new content.
- **But these tools can create falsehoods** and often repeat the biases contained within their training data.
- Millions of people use tools such as **ChatGPT** to help them with everyday tasks like writing emails, summarising text, and answering questions - and others even use them to help with basic coding and studying.

What is DeepSeek?

- DeepSeek is the name of a **free AI-powered chatbot**, which *looks, feels and works very much like ChatGPT*.
- That means it's used for many of the same tasks, though exactly how well it works compared to its rivals is up for debate.

→ It is reportedly as powerful as **OpenAI's o1 model** - *released at the end of last year - in tasks including mathematics and coding.*

* **Like o1, R1 is a "reasoning" model.**

- ✓ These models produce **responses incrementally**,

↓
simulating a process similar to how humans reason through problems or ideas.

- ✓ It **uses less memory than its rivals**, *ultimately reducing the cost to perform tasks.*

→ Like many other Chinese AI models - Baidu's Ernie or Doubao by ByteDance - **DeepSeek is trained to avoid politically sensitive questions.**

- When the BBC asked the app what happened at Tiananmen Square on 4 June 1989, DeepSeek did not give any details about the massacre, a taboo topic in China.

- It replied: "I am sorry, I cannot answer that question. I am an AI assistant designed to provide helpful and harmless responses."

→ **Chinese government censorship is a huge challenge for its AI aspirations internationally.**

- But DeepSeek's base model appears to have been trained via accurate sources while introducing a layer of censorship or withholding certain information via an additional safeguarding layer.

→ Deepseek says it has been able to do this **cheaply** - researchers behind it claim it cost \$6m (£4.8m) to train, a fraction of the "over \$100m" alluded to by OpenAI boss Sam Altman when discussing GPT-4. **(huge relative price differences)**

→ DeepSeek's founder reportedly built up a store of Nvidia A100 chips, which have been banned from export to China since September 2022.

- Some experts believe this collection - which some estimates put at 50,000 - led him to build such a powerful AI model, *by pairing these chips with cheaper, less sophisticated ones.*
- The same day DeepSeek's AI assistant became the most-downloaded free app on Apple's App Store in the US, it was hit with "**large-scale malicious attacks**", the company said, causing the company to temporarily limit registrations.

Who is behind DeepSeek?

- DeepSeek was founded in December 2023 by **Liang Wenfeng**.
- Unlike many American AI entrepreneurs who are from Silicon Valley, **Mr Liang also has a background in finance.**
 - He is the CEO of a hedge fund called **High-Flyer**, which uses AI to analyse financial data to make investment decisions - what is called **quantitative trading**. In 2019 High-Flyer became the first quant hedge fund in China to raise over 100 billion yuan (\$13m).

How are US companies like Nvidia hit?

- DeepSeek's achievements undercut the belief that bigger budgets and top-tier chips are the only ways of advancing AI, a prospect which has created **uncertainty about the future of high-performance chips.**
- "DeepSeek has proven that cutting-edge **AI models can be developed with limited compute resources,**"

COLD WAR PARALLEL, NARROWING THE GAP

DeepSeek's Sputnik moment: Five ways in which US-China AI race plays out for India

Soviet Union's launch of Sputnik, the Earth's first artificial satellite in October 1957. The stunning demonstration of Soviet Russia's capabilities in frontier technology set off panic within the smug American establishment that was so confident of its dominance in science and technology. It also spurred Washington into a massive space programme of

its own, including the landing of the first human on the Moon.

Monday's bloodbath on Wall Street of AI stocks dramatises the surprise that shattered Silicon Valley's claims of a big American lead over China on AI. Looking beyond the shorting of US AI stocks, DeepSeek marks just the beginning, rather than the end of the AI race. There will be a flood of AI products in the coming weeks from both the US and China.

Third, DeepSeek is a reminder that money buys many things, but it is not everything; certainly not love or the capacity for innovation. If the US is seen as pouring billions of dollars into building more computing power and better AI models, DeepSeek has shown it is possible to do more with less.

01.02.2025

FDA APPROVES NON-OPIOID PAINKILLER

SUZETRIGINE: WHY THIS IS SIGNIFICANT

- The United States Food and Drug Administration on Thursday approved *a new type of non-opioid painkiller.*

- *Although it is currently quite expensive*, costing \$15.50 per pill, *the medicine is not addictive, unlike commonly used opioid painkillers.*

✂ The drug, **suzetrigine**,

will be sold under the brand name **Journavx**,
and
manufactured by *US-based Vertex Pharmaceuticals.*

What are opioids?

- *Opioids are a class of drugs* that “derive from, or mimic, natural substances found in the opium poppy plant”, according to the website of the US-based Johns Hopkins Medicine.

- > *Some common opioids include*

oxycodone,
morphine,
codeine,
heroin, and
fentanyl.

- *Prescription opioids are primarily used for pain relief.*

- > They do so

by getting attached to opioid receptors
in the brain cells
|
to release signals
that
block the perception of pain,
|
and
|
boost the feelings of pleasure or euphoria.

- Although opioids have several benefits and are extremely effective as painkillers, *they can be quite addictive.*
- “The feelings of pleasure that result from taking an opioid can also make people want to continue experiencing those feelings, *which can contribute to psychological dependence on the drugs,*” according to a report in the BBC.

How does suzetrigine work?

- Pain is essentially **a signal from one's body to the brain** that something potentially harmful has happened or is happening to the body.

It is *meant to prompt a reaction* where one avoids further damage.

- Dr Sergio Bergese, an anesthesiologist at Stony Brook University (New York), told CNN that **several body parts are involved in the sensation of pain.**

First are **specialised nerve endings** or **'nociceptors'** which are widely disturbed across the body.

Any tissue damage → activates these receptors which send electrical signals **through the spinal cord to the brain,**

which then interprets these as pain.

- ✂ Unlike ***opioids***, which **numb the sensation of pain** **in the brain.**

suzetrigine works by **targeting pain signals** **before they reach the brain.**

"This drug, what it is doing is **interrupting that path**, so even though the tissue injury exists, the brain does not know," Bergese told CNN.

- ✂ *Since suzetrigine does not produce any sensation of pleasure or euphoria*, experts believe that **the drug could not create addiction or dependence among users.**

- Suzetrigine is a **50-milligram** prescription pill that is consumed **every 12 hours after a larger starter dose.**
- The pill is **given in two dosages.**

In trials, participants got an initial dose of 100 milligrams,

followed by 50 milligrams every 12 hours.

Why is this significant?

- Every year, **tens of thousands of Americans die from opioid use.** There were 82,000 opioid-involved overdose deaths in 2022, according to the US Centres for Disease Control and Prevention. **The US gets 30 times more opioid pain relief medication than it needs**, the BBC report said.
- *In 2017, US President Donald Trump called the **opioid crisis a "national shame"**, and went on to declare a public health emergency.*
 - *Now in his second term, he has threatened to impose 25% tariffs on imports from Canada and Mexico if they fail to stop the large amounts of fentanyl crossing into the US.*
 - Trump has also **threatened China with tariffs for its exports of fentanyl.**

BUSINESS NOT AS USUAL

Economic Survey points to need to erase trust deficit, remove regulatory cholesterol. This spirit should animate the budget

WITH RATHER UNCHARACTERISTIC frankness, the Economic Survey 2024-25 talks about the “trust deficit” among economic agents in the country, overcoming which could help pave the path for a Viksit Bharat. Trust is indeed a two-way street. And it is perhaps because of this trust deficit that the private investment cycle has not taken off, despite the “tail-wind” of strong firm and bank balance sheets. The survey says, and rightly so, that “wiping out the trust deficit in the country is imperative and government agencies have to set the agenda in this regard”. But, only a narrow interpretation of this statement would view government agencies as limited solely to the IT department, CBI and ED — it includes the entire state apparatus. Building trust may well be the key, but the question is whether this spirit finds reflection in the budget and the government’s working.

The Narendra Modi government has articulated the goal of Viksit Bharat@2047. Achieving this would require growing at around 8 per cent for a decade or more as per the Survey. This appears to be a daunting task. To put this growth trajectory in perspective — the economy is expected to grow at 6.4 per cent this year, between 6.3 and 6.8 per cent in 2025-26 as per the Survey, and average around 6.5 per cent between 2025 and 2029 as per the IMF. But what will be the drivers of growth? With globalisation “on the retreat”, the Survey says that the “domestic growth levers will be relatively more important than external ones in the coming years”. This export pessimism, at a time when China has registered a trade surplus of almost \$1 trillion, is rather odd, especially considering India’s share in global trade. It reflects the Modi government’s approach to trade, which has been marked more by fear than hope.

Notwithstanding that, the Survey argues that sustaining high growth over the next two decades will require a “deregulation stimulus”, not a fiscal or monetary stimulus. It has mounted a strong argument for “rolling back regulation significantly”. Or to put it bluntly, “getting out of the way”. There can be no quarrels with this. Excessive regulations, after all, increase costs for business. But, the onus for deregulation, in large measure, seems to have been laid at the door of state governments. It is also odd for the Survey to speak about simplification when there has been little progress on reducing the complexity of the GST regime. Moreover, “getting out of the way” should not be limited to just easing the regulatory cholesterol. The government must get out of business. But despite articulating that, there has been little movement on privatisation. The survey is indeed correct when it says that “business as usual carries a high risk of economic growth stagnation, if not economic stagnation”. At the current juncture, bold steps are required.

Wages still below pre-pandemic level, while corporate profits soared to 15-year high in FY24

AGGAM WALIA
NEW DELHI, JANUARY 31

REAL MONTHLY wages for both male and female salaried and self-employed workers in 2023-24 were lower than pre-pandemic levels in 2017-18, the latest Economic Survey showed. The Survey also noted that while corporate profitability soared to a 15-year high in 2023-24, growth in wages has "lagged".

"While the labour share of GVA (gross value added) shows a slight uptick, the disproportionate rise in corporate profits — predominantly among large firms — raises concerns about income inequality. A higher profit share and stagnant wage growth risk slowing the economy by curbing demand. Sustained economic growth hinges on bolstering employment incomes, which directly fuel consumer spending, spurring investment in production capacity," the Survey said.

Among the salaried, real average monthly wage for male workers in 2023-24 was Rs 11,858, down by 6.4 per cent from Rs 12,665 in 2017-18. For female workers, real wages fell more sharply by 12.5 per cent to Rs 8,855 from Rs 10,116 in 2017-18.

Among self-employed male workers, real wages dropped by 9 per cent to Rs 8,591 in 2023-24 from Rs 9,454 in 2017-18. For self-employed female workers, real wages plummeted by 32 per cent,



from Rs 4,348 to Rs 2,950. The real wages, which are adjusted for inflation, have been calculated by dividing nominal wages by retail inflation, the Survey said.

Wages lagged even as "profits surged", with corporate profitability soaring to a 15-year peak in 2023-24 on the back of robust growth in financials, energy, and automobiles, the Survey said. "Despite Indian companies achieving a stable EBITDA margin of 22 per cent over the last four years, wage growth has moderated. This uneven growth trajectory raises critical concerns. Wage stagnation is pronounced, particularly at entry-level IT positions," it added.

"A striking disparity has emerged in corporate India: profits climbed 22.3 per cent in FY24,

but employment grew by a mere 1.5 per cent. State Bank of India (SBI) analysis reveals that 4,000 listed companies recorded a modest 6 per cent revenue growth. At the same time, employee expenses rose only 13 per cent — down from 17 per cent in FY23 — highlighting a sharp focus on cost-cutting over workforce expansion," the Survey noted.

In nominal terms, wages for salaried male workers grew by 27.7 per cent between 2017-18 and 2023-24 to Rs 22,092. For salaried women workers, it grew by 19.4 per cent to Rs 16,498.

Nominal average wages for self-employed male workers grew by 24 per cent to Rs 16,007, whereas for self-employed female workers, it dropped by 7.4 per cent to Rs 5,497 from Rs 5,935.

(Read only marked parts here)

03.02.2025

Trump imposes tariffs on Canada, Mexico & China, spurs trade war

Tariff hikes may unnerve Wall Street

New York/London: Global markets are set for a fresh jolt on Monday after US President Donald Trump launched a trade war with sweeping tariffs on Canada, Mexico and China that threaten to undermine economic growth and reignite inflation. The risk of a global trade war could hurt US corporate profits and pressure inflation, potentially upending US interest rate cut expectations, and further weaken currencies such as the Canadian dollar and China's yuan.

"I do think the markets are going to react to this," said Mark Malek, chief investment officer at Siebert Financial in New York. "Until now the market has really been on Trump's side, but that could change and the market could challenge him for the first time."

REUTERS

EXPLAINED

E Impact on economy

CANADA IS America's largest foreign supplier of crude oil, with 61% of US oil imports from January to November last year coming from there.

Analysts say that while the steep tariffs could have disastrous impacts on Canada's economy, they are also likely to raise cost of living for Americans.

Setback as ISRO navigation satellite fails to reach its intended orbit

THE LATEST satellite launched by Indian Space Research Organisation (ISRO) on January 29, a navigation satellite called NVS-02 which happened to be the space agency's 100th launch, has been unable to reach its intended orbit because of a technical glitch, ISRO said Sunday.

The failure of the satellite to reach its destination, because of a malfunctioning in its thrusters, deals a setback to ISRO's efforts to modernise its NavIC constellation of satellites that provide navigation services over India and surrounding regions. The NVS-02 was the second of the second-generation navigation satellites meant to replace the older IRNSS-series satellites that comprise the constellation.

Satellite Navigation Services

- Satellites for navigation services to meet the emerging demands of the Civil Aviation requirements and to meet the user requirements of the positioning, navigation and timing based on the independent satellite navigation system.

Navigation with Indian Constellation (NavIC)

- To meet the positioning, navigation and timing requirements of the nation, ISRO has established a regional navigation satellite system called Navigation with Indian Constellation (NavIC).
 - NavIC was erstwhile known as **Indian Regional Navigation Satellite System (IRNSS).**
- NavIC is designed with a constellation of 7 satellites and a network of ground stations operating 24 x 7.
 - 1) **Three satellites** of the constellation are placed in geostationary orbit, at 32.5°E, 83°E and 129.5°E respectively, and

- 2) **four satellites** are *placed in* **inclined geosynchronous orbit with equatorial crossing** of 55°E and 111.75°E respectively, with inclination of 29° (two satellites in each plane).

✧ *The ground network consists of*

- **control centre,**
- **precise timing facility,**
- **range and integrity monitoring stations,**
- **two-way ranging stations, etc.**



NavIC offers two services:

Standard Position Service (SPS)

and

Restricted Service (RS)

for civilian users

for strategic users.

- ✓ *These two services are provided in* both L5 (1176.45 MHz) and S band (2498.028 MHz).

✧ **NavIC coverage area includes India and a region up to 1500 km beyond Indian boundary.**

→ NavIC signals are designed to provide user position accuracy better than 20m (2σ) and timing accuracy better than 50ns (2σ).

✧ NavIC SPS signals are interoperable with the other **global navigation satellite system (GNSS)** signals namely

- **GPS,**
- **Glonass,**
- **Galileo and**
- **BeiDou**

✧ **All forthcoming (2023 onwards) NavIC satellites** will broadcast SPS signals in **L1, L5 and S bands.**

Few applications:

- Transportation (terrestrial, aerial and marine)
- Location based services
- Personal mobility
- Resource monitoring
- Surveying and geodesy
- Scientific research
- Time dissemination and synchronisation
- Safety-of-life alert dissemination

GPS Aided Geo Augmented Navigation (GAGAN)

- To meet the navigation requirements of civil aviation,

ISRO and Airports Authority of India (AAI)



have implemented the GPS Aided Geo Augmented Navigation –
GAGAN as a **satellite based augmentation system (SBAS)** for the **Indian airspace**.

- GAGAN system is inter-operable with other international SBAS systems like **US WAAS, European EGNOS, Japanese MSAS** etc.
- GAGAN provides the additional accuracy, availability, and integrity necessary for various phases of flight, from en-route through approach for all qualified airports within the GAGAN service volume.
- GAGAN has been certified by Directorate General of Civil Aviation (DGCA) for RNP 0.1 services on 30th Dec 2013 and APV -1 services on 21st April 2015.
- More details regarding GAGAN system and its applications are available at the GAGAN website [GAGAN](#)

THE ESCALATING CONFLICT IN CONGO, WHY ITS NEIGHBOURS ARE INVOLVED

RWANDAN-BACKED M23 rebels in the Democratic Republic of Congo are seeking to advance south towards Bukavu, the capital of South Kivu province, to expand their area of control in the country after capturing the city of Goma. The latest fighting is part of a major escalation of a decades-old conflict over power, identity, and resources that has killed hundreds of thousands of people and displaced more than one million since its resurgence.

What are M23 rebels?

M23, which refers to the March 23, 2009 accord that ended a previous Tutsi-led revolt in eastern Congo, is the latest group of ethnic Tutsi-led insurgents to take up arms against Congolese forces. It launched the current rebellion in 2022.

The group has accused the government of not living up to the peace deal and not fully integrating Congolese Tutsis into the army and administration.

04.02.2025

1950 A K GOPALAN V STATE OF MADRAS



WHO'S HE:

Born in
1904 in
Kannur,
A K Gopalan

was a teacher before he joined the Independence struggle. He was held for the first time in 1930 for taking part in the civil disobedience movement.

He joined Congress, became an AICC member before joining the Communist Party. His political leanings meant frequent detentions.

RELEVANCE TODAY:

The dissenting view in Gopalan ruling, established that a law has to follow "due process" to be a valid law. Due process is essentially ensuring fair play between the mighty state and the ordinary citizen. Over two decades later, first in 1970 in the RC Cooper v Union of India (the Bank Nationalisation case) and later in 1978, in Maneka Gandhi v Union of India (the passport impounding case) the Supreme Court said that every law has to follow due process if it impinges on fundamental rights for it to pass the Court's muster.

"I was a political prisoner from 1930 to 1945 in the eyes of a foreign government. Under today's popular government, I am branded as a criminal," he wrote in his autobiography *In the Cause of the People*.

In 1950, he moved the Supreme Court against his detention, perhaps hoping that the freedoms guaranteed by the new Constitution that came into force in 1950 would ensure his release from jail. After all, Article 21 stated that "no person shall be deprived of his life or personal liberty except according to procedure established by law".

AKG argued that the preventive detention law violated his fundamental rights under, among others, Article 21 and Article 22 of the Constitution (protection against arrest and detention). However, Article 22, while providing for "protection against arrest and detention", including the right to be informed of charges, the right to a lawyer and the right to be produced before a court within 24 hours, carves out a strategic exception — that protection is suspended when an arrest is under a law that specifically provides for preventive detention. Thus, *AK Gopalan v State of Madras* would thus go on to become the first case to question the Constitution's contrariety.

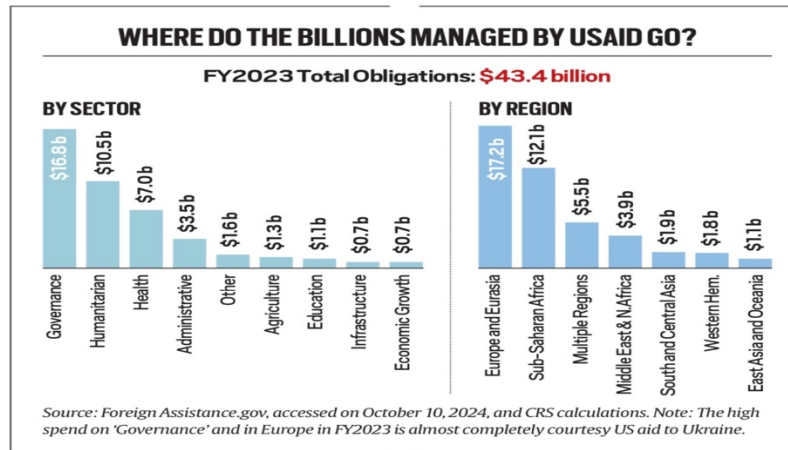
On May 19, 1950, a six-judge bench held that the preventive detention law was valid and only allowed minor procedural safeguards that the length of detention had to be informed at the time of arrest although it could be extended. While AKG lost his case, the prescient questions it raised continue to shape our rights and freedoms.

Born on October 1, 1904, in Peralasseri village in Kerala's Kannur district, Ayillyath Kuttiari Gopalan came from an upper-caste Hindu Nambiar family. After completing college, Gopalan worked as a school teacher for seven years. But the stirrings of the nationalist movement drew him away from the classroom. His participation in the Civil Disobedience Movement landed him in jail for the first time at the age of 26.

While he went on to become president of the Kerala Congress and a member of the All India Congress Committee, interactions with communist leaders in prison shifted Gopalan's politics. By 1934, Gopalan had joined the Congress Socialist Party and, in 1939, when the party merged into the Communist Party, Gopalan became one of Kerala's earliest Communist leaders, alongside P Krishna Pillai and E M S Namboodiripad.

Trump, Musk & USAID

Established in 1961, USAID has played a central role in spreading American influence abroad. But the agency is now a victim of the Trump administration's bid to rehaul the federal government



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